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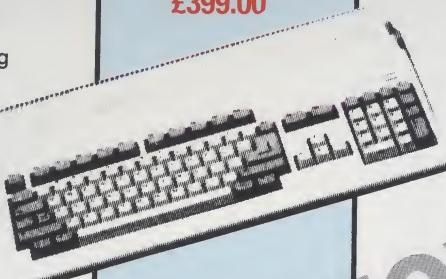
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THE AMIGA DIMENSION

Dear AUI Reader,
From humble beginnings like electric typewriters or calculators, today's technological achievements are emerging from the realms of science fiction to move firmly into our world of science fact.

Without the outstanding technological advances made over the last few years our lives would be radically different. It was not all that long ago that a computer with 512 kilobytes of memory would have taken up a huge amount of space but, here I am, sitting at a desk writing this on a machine with four times that memory that fits inside your average briefcase! And it could soon be a Commodore that you carry around in your briefcase for CBM has finally launched its very own portable - sadly however an MSDOS not Amiga computer.

Innovations continue at an exiting pace. With the advent of data transmission, via orbital satellite, direct communication to any part of the world is now possible; and not just for ground-based installations. In July, All Nippon Airways, with the Japanese Ministry of Post and Telecommunications, will be using Inmarsat communication satellites to offer in-flight telephone and fax services on international flights. Although only experimental at this stage, should it prove succesful, a commercial service will begin late next year.

While on the subject of telephones, the Nynex Corp. in America have announced what they call "the first major step toward building a voice-recognition capability into the telephone network".

One hundred and thirty-five customers of Nynex's New York Telephone Co. are testing a new system that allows callers simply to speak the name of the person they wish to contact into a telephone handset. The voice commands are then compared to data stored on the company's local exchange and the commands matched with a pre-recorded number, which is then dialled. No additional equipment is required and users of the service can amend at will the records in their own voice-controlled directories, via an interactive user interface.

Companies are prepared to invest vast sums of money to make savings of just a few seconds Mastercard International, in New York, are upgrading their credit-card authorisation service. The new system utilises an FM transmission link from participating stores to a nearby transmitter and then onto

Digital Radio Network's private network. From there, the information is transferred to Banknet, Mastercard's packet switching network, ready for processing by the company.

According to Mastercard, using local telephone connections for this procedure takes about twelve seconds, but the FM transmission system accomplishes the same task in only five. Wow! We've just saved just seven seconds? Multiply it many, many times a day and you can save a whole lot of money.

In the USA, to help the Treasury Department a computer network, called the Financial Crimes Enforcement Network (FinCEN), has been set up to monitor and analyse suspicious financial transactions. Most of the transactions tend to be associated with drugs-related profits and organised crime.

A centralised, expert system based, FinCEN pieces together information gathered from other law-enforcement agencies and provides leads for investigators to follow up. The software was written to incorporate the results of extensive interviews with investigators, to mimic, as far as possible, the steps that a human mind might take when considering a possible suspect. This type of software is a form of artificial intelligence, mirroring, or attempting to, the logic of a human expert in a particular field. Sherlock Holmes and Philip Marlowe eat your heart out!

Connectivity is the latest buzz-word. It is predicted that within two years more than 60% of all PCs in the United Kingdom will be connected to some form of network. As this AUI goes to press, there is an exhibition in London where a powerhouse of six connected Amigas is grabbing frames from the international mainframe networks into which its creator, Paul Sermon, has tapped.

Commodore with the Pet, the Vic20, the 64 and the Amiga brought the leading edge of technology within reach of the general public. With its latest developments reported in this issue of AUI - the superb Amiga 3000, the easy-to-use Amigavision authoring system, and perhaps most important of all, the new Amiga-based Compact Disc system, CDTV - it is, like skyborne, voice-operated telephones and connected up expert systems, bringing us in touch with our own futures. Not bad for a company that started by selling typewriters.

Antony H. Jacobson
Managing Editor and Publisher

We apologise for the delay in this issue. It was due to unfortunate production difficulties.

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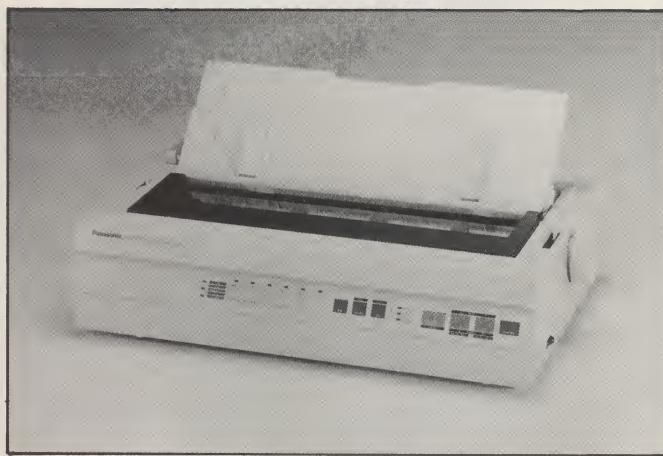
The Panasonic KX-P1695, offered by Action Computer Supplies at £395.00 (MRP £525.00), is a 9-pin, 132-column printer providing a wide range of facilities.

Print speeds are 330/275 cps draft and 66/55 cps NLQ is standard modes. Character spacing is variable from 5 to 20 cpi, and PS and compressed modes are also available. Operating noise is 55 dBA, or 52 dBA in quiet mode.

Features include a bit-im-

age of 240 x 216 dpi, eight resident fonts, variable line spacing, auto paper-feed for single sheets, a 16-KB buffer, and Epson FX100 and IBM Proprinter emulations. Options include a 32-KB buffer chip allowing five down loadable character sets; serial interface; and a cut-sheet feeder.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL. Tel: 0800 333 333.



NEW PRICE FOR MAGELLAN

Emerald Intelligence has announced a new price of \$69 for the Magellan expert system development tool for the Amiga. Emerald has also reduced the price on Magellan packaged with the Interface Toolkit to \$99.

The Magellan expert system development tool was introduced in October 1988 and is currently the only artificial intelligence tool available for the Amiga. Magellan v1.1 was introduced in September 1989, concurrent with the release of the Magellan Interface Toolkit. Version 1.1 opened the architecture of Magellan, allowing Magellan to control and be controlled by other software and hardware devices.

The Interface Toolkit supplies five ready-made interface programs, some with source code, for interfacing with SuperBase files, Lotus 1-2-3 format spreadsheets, the serial port, ASCII text files and also includes some ARexx macros. The price of Magellan up to now has been \$195, while Magellan with the Interface Toolkit has been priced at \$249. The Interface Toolkit has been available as an upgrade to registered Magellan users for \$75 and will now be priced at \$45.

Contact: Emerald Intelligence, 3915-A1 Research Park Drive, Ann Arbor, Michigan, USA 48108. Tel: (313) 663 8757.

GAJITS SOUND

Gajits Music Software are releasing a new range of programs for the Amiga. Designed to help you get the most from MIDI instruments, Gajits' Professional Sound Development Programs will initially retail at £99.99.

Using MIDI, you will be able to edit the internal sounds and instrumental arrangements with the greatest of ease, from full screen graphical displays. The software can multitask with a sequencer program, so the results can be heard immediately, while your music plays. Librarian facilities are included to allow banks of sounds to be created and manipulated. 64 professionally created sounds are included.

Programs are available for the following instruments:

\$10 MILLION PER FOOT

Seymour Cray, father of the supercomputer, is finishing his biggest creation yet - the Cray 3. The three-foot square black octagonal box will sell for \$30m. It is expected to reach speeds of 16 billion calculations per second, and will use chips made from gallium arsenide.

RECORD KONIX JOYSTICK SALES

Konix tell us their joysticks are now selling faster than ever before and in the UK sales for the first quarter of 1990 are more than double the previous best for the January, February, March period.

The improvement in UK sales has been achieved by Spectravideo who have sold almost 50,000 joysticks so far this year. This is almost half the figure achieved for all of 1989 in the UK, which itself was the company's best performance in their home terri-

tory.

After the UK, the second most important territory for Konix is France with Spain in third place. "Reaching the million joystick target for 1990 will be made easier by a number of peripheral releases we have planned for this year. We have invested in excess of £1 million on R & D in the last 12 months, and among the products that we have developed are a number of these peripherals."



DATA PROTECTION BEGINS TO BITE

"With new users coming forward every year and existing users extending their computer applications, we cannot ignore the need to keep reminding them of their legal obligations under the Data Protection Act" says U.K. Deputy Data Protection Registrar, Mr Francis Aldhouse.

"The Act came fully into force in 1987 and most data users have had at least three years to become aware of its implications for them. Nevertheless we believe there are still unregistered users, who either erroneously believe they are exempt or are una-

ware of the Act."

"The Registrar has already successfully prosecuted 25 organisations for failure to register, with the courts imposing fines of up to £1,000 and with costs on top of that. The higher courts have the power to impose unlimited fines", Aldhouse comments. "But, of course, registration is only the first step. Those who have to register must comply with the good practices set out in the Data Protection Principles, such as the requirement to collect personal data fairly and to keep such data up-to-

date."

"Complaints from the public are increasing and the Registrar expects they will exceed 2000 for the 12 months ending on May 31 and will go on growing. With registration for three years costing less than your annual TV licence, failure to register seems an unnecessary risk to take", Mr Aldhouse concludes.

Free guideline booklets and advice will be available on the Data Protection stand or are available from the Office of the Data Protection Registrar, Tel: (0625) 535777.

PRISMA'S PROF PACKS

Prisma's in their 'PLAY AND READ' series have brought out some new 'Prof' packs.

Prof has already helped to teach children to read with 'Prof plays a new game' and now with three new packs he will be helping children's spelling, writing of sentences and their powers of deduction and reasoning. You can pick and choose which packs you need from the series, as each one can be used independently.

'Prof looks at words' is a pack with five games. Prof and your children look at the beginnings and endings of words, double letters, vowels and vowel combinations, all necessary to help children's spellings.

One way to help children's writing sentences is with 'Prof makes sentences'. Here two main games allow children to write sentences either by pointing to words or by typing them in.

Prof turns detective in the pack called 'Prof hunts for words' where children's reasoning and deduction with words is encouraged. The 'Prof' packs cost £19.99 for the Amiga and PC, and £9.99 for the C64. Contact: Prisma Software, P.O. Box 211, Chester, CH1 3NJ. Tel: 0244 326244.

COLOUR ME - JOYSTICK

By using their Competition Pro 5000 design, and manufacturing it in various colour combinations, Dynamics have produced joysticks in colours of the countries competing in the 'World Cup'.

Originally available in the national colours of England, Brazil, Italy, Spain, Belgium, West Germany, Holland, Scotland, Sweden and the USA, these joysticks can be made in any country's col-

ours. Some have already been manufactured for France, Norway and Austria.

Of course, having a joystick in the colours of the national team you support may make you better at computer soccer games, in which case you'd better wear shirt and shorts too - and ignore the funny looks from your family and passing neighbours. Contact: Dynamics Marketing Limited on 061 626 7222.

New Monitor Range

The Bluebest range of video monitors has just been updated and rationalised to provide a standard range of ruggedised monitors. These

the basis of an off-the-shelf product which will meet 90% of customers' immediate needs.

Initially available in 9", 12" and 19" sizes, cased or 19" rack mounted, these products will complement the existing range of products which extend from 3" to 24" and many of which have NATO code numbers. Using readily available white or green phosphor tubes, line rates from 15KHz to 32KHz are available in portrait and landscape versions

with analogue and TTL inputs. Further options such as bonded face panels can also be supplied.

Contact: Russet Output De-

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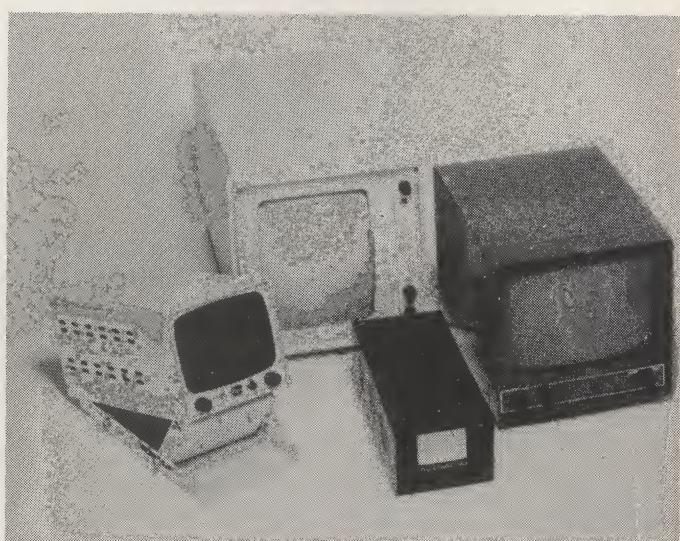
Lattice has shipped free upgrades of its Lattice AmigaDOS C Compiler to all registered users.

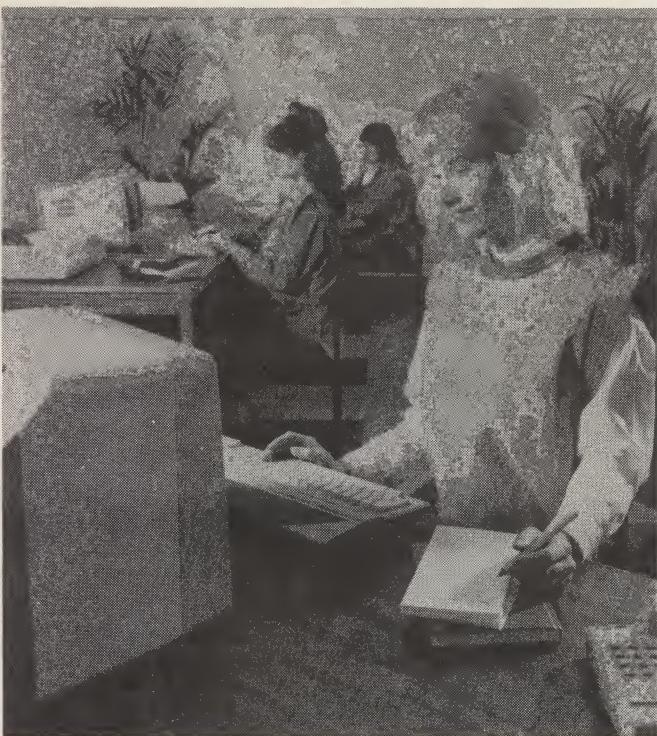
"Everyone with a registered copy of the C Compiler for AmigaDOS Version 5.04," said Michael Napolitano, Lattice customer service manager. "Periodic free upgrades are just one of the ways lattice demonstrates its commitment to you. We also provide unlimited free technical support through a variety of means including our telephone hotline and 24-hour electronic bulletin boards".

Version 5.04 of the Lattice C Compiler for AmigaDOS includes more than 50 enhancements to the compiler, libraries, CodeProbe debugger, and utilities.

If you are a Lattice user and did not receive the upgrade due to an address change or failure to register, contact Lattice, Inc. Customer Service at 2500 South Highland Avenue, Lombard, IL 60148. Telephone (708) 916 1600, FAX 708 916 1190.

vices Ltd, Unit 2, Rose Kiln Lane, Reading, Berkshire RG2 0HP, England. Tel: (0734) 868147.





VDUs – Are pregnant women at risk?

A new survey published in the June issue of "The American Journal of Industrial Medicine" conducted by the Kaiser Medical Care Programme of Oakland, California, involving 1,600 pregnant women revealed that pregnant women who operate VDUs for more than 20 hours a week suffered twice as many miscarriages as those involved in other office work.

Experts believe that Electro Magnetic Radiation emitted by VDUs alters and disrupts

cellular development in the embryo.

A new British product can now protect VDU operators from electro magnetic radiation. Microshield is a smock manufactured from an innovative new material which has remarkable protective qualities, shielding operators from up to 99% of radiation emitted from most VDUs. Fashioned for the eighties, it is light, comfortable, easy to wear and washable and can give operators peace of mind in those vital early weeks of pregnancy or when pregnancy is anticipated.

Price: £55.00 + VAT
Contact: Meditrade Marketing,
PO Box 15, Emsworth, Hampshire PO10 7YH. Tel: 0234
377717.

HEWSON'S SCAVENGER

Hewson have told us of a new arcade title from their programming genius - John Phillips. Propelled through time - Scavenger, a mortal being, wandering the paths of infinity in search of his homeland. Within each era from the past to the future the inhabitants and creatures attempt to obstruct Scavenger retrieving the artifacts which are ran-

domly scattered throughout. They must be returned to their rightful time. Scavenger's only hope of going back to the future.

Scavenger, Hewson promises, is horizontally scrolling at 25 frames per second and its music contains 8 Channel sounds. It is due for release July/August 1990.

RELIVE HISTORY WITH S.S.I.

Strategic Simulations Inc. has released two new historical war simulations, Second Front and Waterloo.

Second Front is one, say SSI, of the most detailed wargames that it has ever published. The map extends from Berlin in the West to Stalingrad in the East, and covers the entire Russian Front. One or two players command over 150 German divisions and over 200 Soviet divisions, with asset information available to the individual tank, plane and infantry squad level.

Pop-up menus and state-of-the-art graphics are used while directing a variety of air operations such as interdiction, airlifts, and strategic bombing. Exercise complete control over production facilities or let the computer handle production. Call up such vital information as enemy controlled areas, supply

levels, until readiness and experience levels.

Waterloo enables the player to re-create one of the greatest military battles of all time. Napoleon and Wellington were the best tacticians of their day and the player has the chance to step into their shoes. Static three dimensional scenes of the state of the battle may be viewed from any position or in any direction and the battle is controlled by giving orders to the generals in text form. The generals "interpret" orders according to their nature, therefore an impetuous general will charge in with everything while a more cautious general will shell the enemy for hours.

Waterloo is a complex game which, say SSI, is probably the closest representation of the battle of Waterloo ever to appear in any medium.

Real-Time Digitiser

The VDAmiga VD3 is a real-time digitiser that allows the user to take input from any video source and convert it into a format capable of being manipulated by the Amiga. Digitising is done in real time i.e. 1/50th of a second. The picture is stored in the VDAmiga's memory and then transferred to the Amiga via the printer port. The screen can be updated at up to 10 frames

per second, depending on the resolution used. A complete PAL picture can be read by the VDAmiga. Also available is the VDAmiga VD3 + colour digitiser which allows full 4096 colour digitising from any colour video source, including video tape.

PRICES: VD3 - £550 + VAT, VD3 + COLOUR - £795 + VAT.

CONTACT: BC Marketing, 211 Kenton Road, Harrow, Middx HA3 0HD. (01) 907 3636.



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Sound, Future Sound, Prosound, Quasar
Sound, etc etc
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* THIS MAJOR INNOVATION MEANS THAT ALL
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- SWITCH CAN BE OPERATED AT ANY TIME
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COMPUTER'S PORTS
- MAKES ACCESS EASIER
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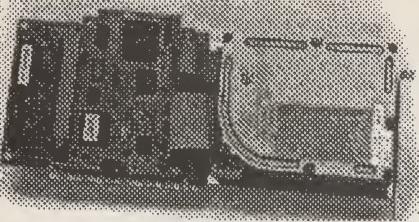
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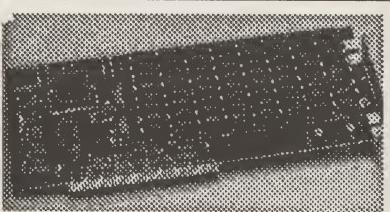
DRIVE A HARD BARGAIN! SLOT MACHINE HARD CARD FOR 2000

Ready formatted and auto-booting for the 2000. Can be a card, bay mounted or in separate case-Your Choice. We fit the OMTI rapid caching controller for really FAST mass storage. The 24 Millsec Toshiba drives we use are so quiet you cannot hear them run and a 44 meg system will cost you a LOW £450 and 66 meg at RIDICULOUS £550. A hundred pounds cheaper than elsewhere (COMMODORE'S OWN 40 MEG RETAILS AT £700.00!!) WORKS IN THE NEW B3000 ONLY FROM SPIRIT-FIRST YET AGAIN

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You provide the ST506 drive and we sell you an A500/A1000/B2000 interface, controller, cables (extra long 36") and fan cooled power supply in a stylish drive case that holds a full height drive or two half height. (The system supports 2 drives) The full kit costs £299 (RLL) or £289 (MFM) Or buy a complete A500/A1000 system 44 megs for £499

NEW!



OCTABYTE

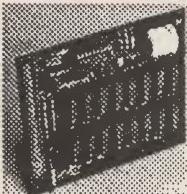
For the B2000. From SPIRIT The very latest type of technology using a ram controller chip to avoid the wait state on the CPU (as with other boards). Contiguous memory NOT fragmented. 8 meg board with graphics software support disk and utilities. 2 megs a LOW £275 8 megs £699

X RAM

As for the OCTABYTE but this one is for the A500 and A1000 and plugs into the expansion slot. The beauty of this one is that you can plug it into your 2000 when you upgrade so your investment is NOT wasted. In a very stylish low height chassis 2 megs a LOW £325

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MUSIC X Full Version at a ridiculous £89 rrp £224! or £99 with a midi interface.

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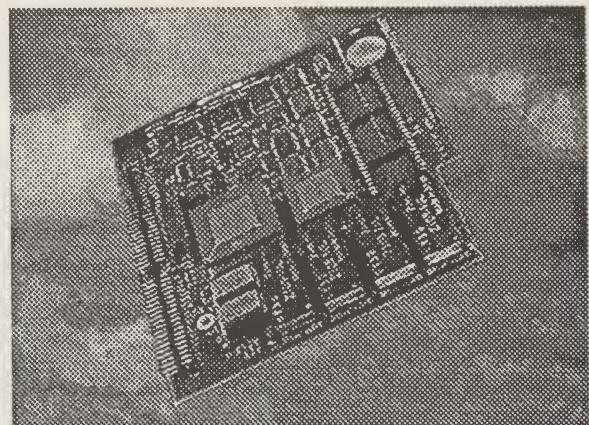
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ACCELERATOR
for A500 & B2000
A1000 VERSION AVAILABLE**

Upgrade your A500 or B2000 to more power. Asynchronous design, surface mount technology provides blazing fast CPU performance at 25 and 33 MHz. Switches to 68000 mode when required. Optional math co-processor can run up to 50 MHz for racing through rendering, ray-tracing. 32BIT wide SRAM for putting Kickstart into RAM for blazing fast operations. Uses your existing 16 bit wide ram or use the optional 1-8 meg 32 bit ram board, double socketed for 4 meg Drams taking it up to 32 meg!! This board can give you up to 11 times performance gain over a standard Amiga. Wait state selectable RAM gives faster throughput. Rendering an animation in Sculpt 4D that took 18 hours in 68000 mode took just 32 minutes in 68030 mode. Faster than Commodore's 68030 board. Unlimited upgrade capability-expand as your needs and wallet allows.. LOWEST priced 68030 accelerator for any Amiga. The same board for the A500 fits in the B2000 so your upgrade path is secure. You can start with the bare board then add the co-processor, 32bit SRAM, then the 32 bit memory board, later put a 33 MHz 68030 in and upgrade the 68882 to 50 MHz. Technical support available.

EXCLUSIVELY FROM US



25 MHz board	£699
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32bit ram board available July, 1990
Send for full specification, details & prices.
This advert was done with this 68030 board & Pagestream V2.0 in a fraction of the time it would have taken with a standard Amiga and output to a Postscript Laser.

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A1000 memory board with clock, can autoconfigure as 512K, 1meg, 1.5 meg. Software ram test disk 1.5 megs £250

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NO leads to the GARY chip thus eliminating potential damage to this expensive chip. This board can be configured to any situation or use with software support disk.

**Zero K board £99
4 megs £399**

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ULTIMA V FOR AMIGA

Mindscape International has announced the release of Ultima V for the Amiga.

"In a desperate call to arms you are summoned back to Britannia to discover the fate of Lord British and to defeat the self-righteous tyranny that is found in misguided virtues." (What was that again? Misguided vir-

priced at £29.99.
Ultima V for the Amiga will
wouldn't they?).

CREDIT TEXT SCROLLER

Credit Text Scrollers say mindware, its creators allows the easy and automatic creation of smooth scrolling text screens. Using a point-and-click interface, the user can select fonts, font sizes, and scroll rates. Creation of a credit screen or information display involves using your favourite text editor or word processor to generate the information to be displayed, then using Credit Text Scroller, which will automatically create the desire display. The final result is in the common ANIM format, for easy interchange with programs such as Deluxe Paint which support this format.

The smooth scrolling result can be genlocked over a video source, or overlaid on another ANIM. The program allows text adjustment within a line.

Credit Text Scroller allows the automatic addition of colours and drop shadows to standard Workbench fonts. This feature, besides

adding to the visual appeal of the result, alleviates the problem of text clarity when genlocked over a video source. Colour fonts are also supported.

As an added feature, a subtitling option can be invoked which takes a simple text file as a source of subtitles which can be overlaid or genlocked to your video or presentation.

Running under the advance T.A.S.S. system, Credit Text Scroller inherits such features as DiskANIM, which allows the players of ANIM result from RAM, hard drive, or even floppy, the size of your information display is limited only by the size of your hard drive.

Credit Text Scroller, a Video Solutions (TM) Series product, works on all Amiga computers with 1 MB of RAM. Contact: Mindware International, 110 Dunlop W Box 22158, Barrie, Ontario, Canada, L4M 5R3



PROGRAMMABLE KEYBOARD

At the 'Which Computer?' Show, The Concept Keyboard Company demonstrated how touch sensitive, programmable Concept Keyboards can be used in a wide variety of industrial and commercial applications.

Concept Keyboards interfaced via software the Amiga and attracted considerable attention. A

major benefit of the Concept Keyboard say the Company, is the facility for fast and efficient interaction between user and computer without the need for the learning of complex instructions.

The keyboards allow the user to go straight to the required keys and speed up the growth of expertise even in the inexperienced user.

GOLD DISK PREVIEWS SHOWMAKER

Gold Disk is to release Showmaker, a new multimedia presentation generator that allows the building of continuous, self-running presentations incorporating internal or externally produced text, images, computer graphics, animation, music, video and audio.

Targeted at the growing demand for high quality multimedia desktop presentation software, Showmaker is a powerful system that lets you visualize and construct persuasive "shows" containing Amiga and non-Amiga based elements.

Showmaker uses the Amiga to manipulate and establish communication

with virtually any external device to include in a presentation - from laser disk players to MIDI keyboards. Showmaker can be much longer than those running exclusively out of memory.

Showmaker also comes with a special facility that gives very accurate control of a presentation and its timing - so that you can synchronize video and audio into a single, polished product.

Showmaker will work with any Amiga 1000, 2000 or 2500 with 1 Mbyte of RAM or more. Contact: Gold Disk, P.O. Box 789 Streetsville, Mississauga, Ontario, Canada L5M 2C2, or call 416 828 0913.

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DISKS
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SUPRARAM 8 MEG A2000 (2MB fitted)	£289

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GVP, SUPRA, MICROBOTICS – CALL FOR PRICING
68030 ACCELERATOR CARDS – A2000 FROM £699

A590 RAM UPGRADES

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Telebox 3

Telebox 3 is a complete telex management system from Data and Control Equipment Ltd., in a single box. It can be connected to any computer, word processor or electronic typewriter with an RS232 port and will use your existing word processing software to send messages world wide. The unit's own on-board software carries out all telex functions automatically, so you have no complicated routines to learn.

When a message is received the unit will either print it out or store it in its own memory as required. Because Telebox 3 is a stand alone unit, you can switch off your computer overnight and at weekends, while the unit continues to send and receive messages.

Many features are included such as a message capacity of at least 50,000 characters, an integral battery backup, automatic re-dialling, priority messages, multi-addressing, real time clock, privacy of outgoing calls and batching.

The whole box measures 320 x 275 x 75mm and is British Telecom approved.

Another clever box from Data and Control Equipment is the Faxbox. It enables computer and word processor users to



initiate facsimile transmissions direct from their desks. This must be preferable to having to travel to a central fax machine, perhaps in another office. According to DCE, nearly three quarters of all fax originals are generated on such systems so faxbox can speed up transmission by eliminating the need for a hard copy stage. Again, this unit is

suitable for use with any computer or word processor with an RS232 port. The unit even caters for several companies or divisions using the same fax machine, adding pre-programmed graphics such as logos and letterheads as instructed by the operator. Faxbox will store up to 300 pages in its memory for later transmission. Urgent messages can be given priority in the queue and the unit offers full transmission verification and

call logging. Transmission quality, says DCE, is very high, as no scanning is involved. Faxbox transmit automatically at the maximum speed of the receiving machine, minimizing call times.

Contact: Data and Control Equipment Ltd., Kingfisher House, Walton Street, Aylesbury, Bucks HP21 7QG. Tel: 0296 432971.

PANASONIC'S FAXCARD

The Panasonic FX-BM 89 Faxcard fits inside a PC XT/AT or compatible, and allows it to act as a paperless fax machine. The user follows the menu that comes up on each screen, and pressing the appropriate key to select the function required.

The FX-BM 89 automatically converts word processing files to fax format from a wide range of W-P packages including WordStar, DisplayWrite and WordPerfect. Compatible with Group 3 fax machines, it will store, display or print any received image.

It has a dedicated 80188 processor, with 256 KB of RAM, so that it can run in

background mode. This means that messages can be transmitted or received via the fax card without interrupting any other task - such as word processing or spreadsheet - that is being carried out on the computer at that time.

Features include tone/pulse dialling, graphics editing, and an auto-print facility. The Panasonic FX-BM 89 costs £495.00 (MRP) but is available from Action Computer Supplies at £389.00.

Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL. Tel: 0800 333 333.

PD ART SOFTWARE

Are you interested in participating in Amiga image and animation networking? Paul Sermon is currently studying Fine Art at Reading University with the aid of the Amiga. He is working on an interactive installation consisting of six Amiga 500's held in a "leaf type" metal structure linked directly to the University Main Frame JANET and potentially EARN (European Academic Research Network), displaying images and animation sequences, created through exchange with Amiga users in Colleges of Art and Universities around the world.

Paul Sermon wants to establish a global Amiga Art networking forum dealing with all aspects of Amiga Art, from computer games to scientific image processing, input from Amiga users would be appreciated. A disk of public domain communications software and information regarding EARN has been compiled. Contact: Paul Sermon, 26 Amity Street, Reading, Berkshire, RG1 3LP. Tel: 0734 352660 or E-Mail: LQPSERMN@UK.AC-READING.AM.CMS

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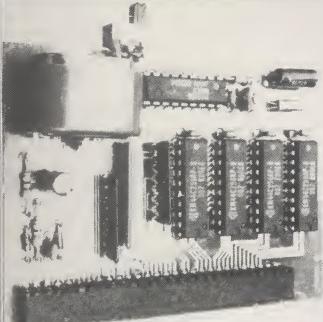
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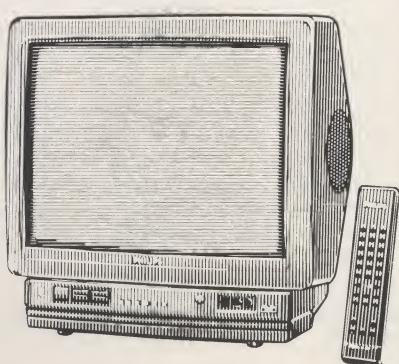
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In arcade mode, Xiphos presents challenging array of enemy ships with scouts, fighters, cruisers, mother ships and star bases darting into play. Each has its own point value for scoring and the difficulty increases with every successful combat kill. Unlike most arcade games however, Xiphos delivers combat action with the out-the-cockpit view, high level graphics and sounds of a flight simulation.

When you select mission mode, you're into an intriguing space adventure that includes the elements of role-playing and simulation. Space ships and even entire plantlets have disappeared from the universe. The Galactic Council has chosen you to undertake a stealth mission to infiltrate the hierarchy of artificial universes and destroy Xiphos.

You'll move through five

universe levels, with different obstacles to overcome and 20 to 50 bases to explore in each one. There are meteor fields, enemy ships with flapping wings, and gravitational and magnetic disturbances that affect your ability to maneuver and fight. During the journey, you must find fuel

and energy supplies, trade for commodities, distinguish enemy bases from friendly ones, and takes sides in space confrontations between other alien races.

Xiphos places a premium on flying and combat skills, but the strategic aspects of the game require excellent decision-making as well. You must analyze intelligence data on enemy ships and bases and negotiate your way into each successive level of the artificial universe system. Xiphos contains third-person subplots that take place independently from your own actions, and you'll suddenly encounter situations where a wrong choice can lead to your own destruction.

Xiphos, Zoo tells us, "features brilliant 3D graphics with solid filled ships, creatures, bases and missiles."

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For cleaning screens and plastic surfaces of peripherals RPS have produced two new products; The first is a kit made up of eight twin 'wet and dry' sachets containing cotton wipes. The wet tissue is soaked in a cleaning lotion that aseptises the treated surface and deposits an anti-static film which restores the shine but eliminates dust attraction. The dry tissue is used to absorb any excess moisture and remove the dirt in solution. The other is a non-drip, non-splash cleaning foam for larger items of hardware. It gives an anti-steam and anti-static treatment whilst dissolving dirt and grime, allowing it to be easily wiped away.

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BASIC – THE FORGOTTEN LANGUAGE?

To program the Amiga in anything but C is thought by some a heinous crime. However, Les Cooke, an experienced C programmer, took time out to look at AmigaBASIC and was pleasantly surprised.

BASIC is boring. 'C' is sexy. So they say . . . There is no doubt that 'C' is very fashionable at the moment, while BASIC, on the other hand, is considered a bit dull and hardly worth bothering with.

As with most things in life, there are horses for courses and while 'C' can be a good language for developing complex software, BASIC is more than adequate for writing small applications – especially if you are still developing your programming skills.

However, most Amiga owners will have their choice of language decided for them by forces far more powerful than fashion. BASIC is FREE but you have got to buy 'C'. It is not particularly cheap either.

There is no need to feel like a poor relation just because you have no language to use other than BASIC. The BASIC provided with the Amiga, AmigaBASIC, is a very good implementation and gives you access to many of the Amiga's special features.

When I first bought my Amiga, I ignored BASIC for three months. There were a number of reasons for this (like being astounded by the things DPaint could do) but in the main I remembered quite painful sessions typing BASIC without a proper editor (and using a 40 column screen). Sitting down on a sharp stick was less painful!

It came as a surprise, when I bothered to look at AmigaBASIC, to find that it had a reasonable editor. Admittedly its only functions are Cut, Copy and Paste but it does allow you to edit in a full-screen mode, rather than a line at a time. You probably will not think this exceptional but if you have struggled with typing

BASIC on older computers you will know what a blessing this editor is. What is more, as an aid to readability, all BASIC command words are converted to upper case.

I was now encouraged to try out a little BASIC, so I looked at the manual and was further surprised to see that AmigaBASIC provides a number of features that make it potentially quite interesting. Pages 1-3 to 1-7 in the AmigaBASIC book give a quick rundown on these features.

I was interested to see that support was provided for: windows, the mouse and menus. I decided to write a small drawing program that would use these features (and some others). The program that accompanies this article is the result. The program was not written with any ideal other than to learn how to use windows, menus and the mouse from within BASIC, although in the end event (or interrupt) trapping and library calls got dragged in as well. It contains no routines to handle unexpected situations.

The segment labelled 'Main' is the main body of the program from start to finish. The first command, LIBRARY, is one of the most powerful additions to BASIC that make AmigaBASIC so interesting. I had not intended to explore this but it proved to be useful when I got to the actual drawing part of the program. LIBRARY allows you to call machine language routines from the Amiga libraries. In this case I am using LIBRARY to get at one of the graphics routines but it can be used to invoke AmigaDOS routines from BASIC as well. If you want to make best use of this command you will need the appropriate manuals.

The ON MENU and ON MOUSE com-

mands tell BASIC where control is to be passed when either a MENU item is chosen or a MOUSE button is pressed. BASIC does NOT go to those labels when these commands are executed. The MENU ON command allows MENU choices to be taken notice of. This is required even though an ON MENU has been specified.

'Set.Screen' defines a screen in which a new window, yet to be defined, will exist. I decided to define a new screen, rather than use the existing BASIC screen, because I wanted to make sure I could use the full PAL depth from a BASIC program. This segment also sets the aspect ratio so that circles are drawn as circles, not ellipses. The value of 0.5 was found by the 'suck-it-and-see' method. Attempts to work it out intelligently failed.

'Set.Window' creates a window. Notice that the maximum width and depth must be less than that defined on the screen. No mention is made of this in the AmigaBASIC book but I assume that allowances must be made for the vertical and horizontal scrolling gadgets even though they cannot be specified in the WINDOW command.

'Set.Menu' sets the Menu Title Bars and the Menus themselves. Two blank Menu Titles had to be created in order to overwrite the existing BASIC Menu Titles in spite of the fact that I am running in a new screen. Perhaps I have goofed here somewhere.

Back in the 'Main' part of the program we come to the loop where the program sits waiting for events to happen. The loop consists of a SLEEP command and the program 'sleeps' at this spot until one of the interrupts recognised by BASIC occurs. If it is an interrupt that has been enabled, in this case a MENU or MOUSE event, control is passed to the appropriate routine. Any other event causes another iteration of the loop. It is important to note that the program does not thrash around the loop waiting for events – it sits at the SLEEP. The loop and thus the program, is terminated only when the 'quit' Menu is selected.

When the program is terminated we do our housekeeping by closing the LIBRARY, WINDOW and SCREEN and disabling the events.

cont. on next page

continued from page 21

BASIC – THE FORGOTTEN LANGUAGE?

What happens when a Menu item is selected? The ON MENU command has instructed BASIC that control must be passed to the 'Check.Menu' label. This is a subroutine that terminates at the RETURN command. When 'Check.Menu' completes, control is passed to the command after the one from where 'Check.Menu' was called. Control does NOT go to the command after the ON MENU GOSUB command. When 'Check.Menu' is entered, BASIC disables any further Menu interrupts until the subroutine returns. This is to avoid unnecessary complication with recursive interrupts.

Whenever a Mouse interrupt occurs, BASIC transfers control to the 'Check.Mouse' subroutine. Once again, BASIC now disables Mouse events until the subroutine terminates at the RETURN command. After getting the current pointer position, control is passed to the appropriate drawing tool subroutine.

'Get.Start.XY' gets the position of the pointer when the left Mouse button was pressed but before MOUSE(0) was issued.

'Box' draws a box by 'rubber-banding'. Before anything else it makes the end position the same as the start position in case the left button has already been released by the time 'Box' is entered. The position of the pointer is constantly evaluated for as long as the left button is pressed down. At every iteration of the loop, the 'rubber-band' box is drawn at a size that depends on where the pointer was when MOUSE(0) was executed. At this point I ran into trouble. On my first attempt I got lots of boxes drawn, one for each iteration of the loop. Easy, I thought. Just draw the box twice, once in foreground colour, then overwrite it in background. When the loop finishes draw it once more in foreground. This did not work either. Drawing in background clears any part of the picture already at that point.

The answer lay in using a LIBRARY CALL to get at a function in the graphics library that allows you to set the drawing mode (SetDrMd). In this case we set 'complement' mode whilst the left button is down and then set normal mode when

it is released. This achieves the desired result – a rubber-banding box that does not overwrite what is already there. SetDrMd is not described in the BASIC manual. I found out how it was used by the time honoured method of cribbing what was done in another program. In this case I looked at 'ObjEdit' in the BASICDemos drawer. 'Round.Thing' and 'Lline' follow the same principle as 'Box' to draw circles and lines.

Now that I have found out a bit more about AmigaBASIC it looks as though there is more to it than I first thought. The LIBRARY command offers great potential for using the Amiga's unique features but you will need the appropriate books to get the most from it. Other interesting areas supported by AmigaBASIC are: animation, speech, sound and random access file support. So, do not pass BASIC over, give it a try. After all it IS free.

L.C.

```

REM Simple Drawing Program
REM To explore window, menu, and mouse features via BASIC

Main:
LIBRARY ":BasicDemos/graphics.library" ' open AMIGA graphics library
WINDOW CLOSE 1 ' close BASIC window
ON MENU GOSUB Check.Menu ' instruct BASIC to Check Menu when Menu item
                          ' chosen - does not execute at this point
ON MOUSE GOSUB Check.Mouse ' tell BASIC where to go when left button...
                            ' pressed
MENU ON ' enable Menu event trapping

GOSUB Set.Screen ' create a screen
GOSUB Set.Window ' create a window
GOSUB Set.Menus ' set up menus
quit = 0

WHILE (quit = 0)
  SLEEP
  WEND

  ' only get here when Quit chosen from Menu
  ' close AMIGA graphics library
LIBRARY CLOSE
MENU OFF
MOUSE OFF
MENU RESET
WINDOW CLOSE wn.id
SCREEN CLOSE sc.id
END ' ***** END OF PROGRAM *****

Check.Menu:
menu.id = MENU(0) ' BASIC disables Menu events now
menu.item = MENU(1) ' returns which Menu Bar choice was from
ON menu.id GOSUB Project,Draw ' process appropriate Menu
RETURN ' BASIC re-enables Menu events

Project:
IF menu.item = 1 THEN quit = 1 ' only option is 'quit' - test redundant
RETURN

Draw:
MOUSE ON ' draw Menu chosen
tool = menu.item ' enable Mouse events
              ' tool will indicate Box, Circle, etc
RETURN

Check.Mouse:
' Mouse event occurred. BASIC now disables...
' ..MOUSE events
GOSUB Get.Start.XY ' get position of pointer when left mouse...
                   ' ..button pressed
ON tool GOSUB Box,Round.Thing,Lline,Pfill ' execute selected drawing tool
RETURN ' BASIC re-enables Mouse events

```

```

Get.Start.XY:
dummy = MOUSE(0) ' mouse functions work from when MOUSE(0)...
                  ' ...was issued
start.x = MOUSE(3) ' pointer x position when left button pressed
start.y = MOUSE(4) ' pointer y position when left button pressed
RETURN

Box:
' draw box from where pointer was...
' ..when mouse was pressed
' in case left button...
' ..has been released
end.x = start.x
end.y = start.y

WHILE MOUSE(0) = -1 ' while left button down
  end.x = MOUSE(5) ' position when left button released
  end.y = MOUSE(6) ' position when left button released
  CALL SetDrMd(<WINDOW(8),3) ' allows box to be dragged...
  LINE (start.x,start.y)-(end.x,end.y),1,b ' ..without erasing...
  LINE (start.x,start.y)-(end.x,end.y),1,b ' ..other parts of drawing
  CALL SetDrMd(<WINDOW(8),1) ' restore drawing mode
WEND ' end while left button down

LINE (start.x,start.y)-(end.x,end.y),1,b ' draw final box
RETURN

Round.Thing:
radius! = 0! ' draw a circle
              ' in case left button has been released
WHILE MOUSE(0) = -1 ' while left button down
  end.x = MOUSE(5) ' position when left...
  end.y = MOUSE(6) ' ..button released
  dx! = ABS(end.x - start.x) ' difference between start...
  dy! = ABS(end.y - start.y) ' ..and end position
  radius! = SQRT(dx!^2 + dy!^2) ' radius from pythagoras
  CALL SetDrMd(<WINDOW(8),3) ' allows circle to be dragged...
  CIRCLE (start.x,start.y),radius!,1,,aspect! ' ..without erasing...
  CIRCLE (start.x,start.y),radius!,1,,aspect! ' ..other parts of drawing
  CALL SetDrMd(<WINDOW(8),1) ' restore drawing mode
WEND ' end of while left button down

CIRCLE (start.x,start.y),radius!,1,,aspect! ' draw final circle
RETURN

Lline:
end.x = start.x ' draw a line
end.y = start.y ' in case left button...
                  ' ..has been released
WHILE MOUSE(0) = -1 ' while left button down
  end.x = MOUSE(5) ' position when left...
  end.y = MOUSE(6) ' ..button released

```

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continued from page 22

```

CALL SetDrMd& (WINDOW(8),3)  ' set drawing mode to allow line to be...
LINE (start.x,start.y)-(end.x,end.y),1  ' ..dragged without erasing...
LINE (start.x,start.y)-(end.x,end.y),1  ' ..other parts of drawing
CALL SetDrMd& (WINDOW(8),1)  ' restore normal drawing mode
WEND
                                ' end of while left button down
LINE (start.x,start.y)-(end.x,end.y),1  ' draw final line
RETURN

```

Fill:

```

paint.col = 2           ' fill colour is colour 2
edge.col = 1            ' edge colour is foreground colour
PAINT (start.x,start.y),paint.col,edge.col ' fill area to edge colour
RETURN

```

Set.Screen:

```

sc.id      = 1          ' screen id
sc.width   = 640        ' width in pixels
sc.height  = 256        ' height in pixels
sc.depth   = 2          ' number of bit planes
sc.mode    = 2          ' high res, non interlace
SCREEN sc.id,sc.width,sc.height,sc.depth,sc.mode
aspect!    = .5          ' aspect ratio for circle (on Philips 8852)
RETURN

```

Set.Window:

```

wn.id      = 1          ' window id
wn.left   = 50          ' left edge
wn.top    = 50          ' top edge
wn.right  = sc.width - 23 - wn.left ' right edge, allows for scroll bar
wn.bot    = sc.height - 14 - wn.top ' bottom edge, allows for scroll bar
wn.type   = 22          ' type of window
WINDOW wn.id,"Simple Drawing
Program", (wn.left,wn.top)-(wn.right,wn.bot),wn.type,sc.id
PALETTE 2,1!,.6,.67      ' set colour 2 to a pinkish colour
RETURN

```

Set.Menu:

```

MENU 1,0,1,"Project"      ' sets Menu 1 with title bar "Project"
MENU 1,1,1,"Quit"         ' quit selected from this Menu

MENU 2,0,1,"Draw"          ' set menu 2 with title bar "Draw"
MENU 2,1,1,"Box"           ' box tool
MENU 2,2,1,"Circle"        ' circle tool
MENU 2,3,1,"Line"          ' line tool
MENU 2,4,1,"Fill Area"     ' area fill tool

MENU 3,0,1,""               ' Cover BASIC Menu "Run"
MENU 4,0,1,""               ' cover BASIC Menu "Windows"
RETURN

```

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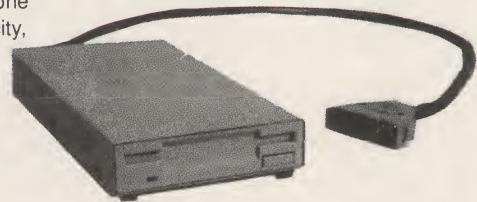
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Amiga 3000

The Workstation Amiga Arrives

Why is Commodore upgrading the Amiga to attack the market dominated by high-powered names like DEC or SUN? Joe Gene Parris investigates

If you are sitting at home with an unexpanded A500 wondering whether to buy a half a meg of new memory, the description "Workstation" might sound no more exciting than the place at which your British Railway train drops you in the morning to earn your daily bread - and the bread to purchase that extra memory. But if you are in-

volved in any professional way with computing, you will probably know that "workstation" is the area of the computing business which today seems likely to spell the biggest money for the computer manufacturers over the next couple of years.

Workstations are, some supposedly authoritative observers say, where the

future of business computing lies. Oh yes, there will continue to be the heavy number-crunching mainframes and even those highly specialised supercomputers with which the name of Seymour Cray will be go on being associated but the productivity of the creative individual in a whole variety of businesses and professionals will be based,



they claim, on a computer that is, in effect, as powerful as what is today called a "Minicomputer" and which in truth is really not "mini" at all.

This kind of very powerful computer can only be denominated "mini" in comparison to the massive force of the mainframe. While IBM has dominated the mainframe market, the mini field has been very well ploughed by the second biggest computer company in the world, DEC - Digital Equipment. The most famous of their early successes was the PDP series, many of which are still operating. They then brought on the VAX series which was also a huge success.

Minis cost a lot of money, upwards of £25,000. And if someone was going to pay that kind of cash, they were not looking for £100 word processors to run on their machine. They wanted it for something special, and to use custom-made software that fitted their own professional needs, CAD/CAM maybe or specific accountancy or legal applications.

The SUN came up...

While the ever-cheaper PCs spread around the world onto the desks of line managers and their secretaries, at the higher specialised level the mini reigned supreme. Then the SUN came up...

Sun Systems, also a U.S. company, created what was in effect a cut-down and much more flexible mini; not a file server that just held large amounts of shared information but a computer that you could work on for difficult projects all by yourself.

But what was also important about these new machines was that they were cheaper. You could buy one for around £15,000. Other companies got into the act and a new phrase had to be coined - a pretty down-to-earth one - they called it a "workstation".

One of the advantages of this growing market was that although the operating systems of these workstations might still be non-uniform, machine-specific, like home computers but different from the spreading MSDOS system, more software could easily be written across them and it was perfectly possible to use a much wider range, including MSDOS, as many of these machines also conformed to that standard too. As is usual in electronics, prices fell and soon it was possible to buy a workstation for around the £10,000 to £12,000 mark.

With the arrival of the RISC (Reduced Instruction Set) computer and Intel's very heavyweight 486 chip last year, the power that is needed to run the complex and demanding applications that make companies buy workstations is beginning to become available at a much lower price point - falling well

below the £10,000 line. And that brings it within the budgets of a much greater group of potential users.

It is power and speed that workstations need. Yes, everyone wants to run a few simple MSDOS packages but the UNIX standard brings far more possibilities. And those who use workstations don't respond to the sheep-like attitudes of administrators who are afraid to step outside the MSDOS standard. Their specialised workstation applications are not simple spreadsheets but complicated, technical and even creative tasks.

That is how the situation stands now. But, according to those who predict how the future of computing will be, tomorrow we will all be workstation users. The power that they provide should become available to each of us so that we can increase our professional productivity and creativity in science, in design, in education, in business, in entertainment.

"It can even be used as a low cost, highly intelligent graphics workstation/terminal for existing DEC or SUN systems"

And that is where Commodore sees its new Amiga 3000 fitting perfectly. It has the power of the Motorola 68000 that we have all used but greatly upgraded to the 68030 that so much has been talked about. It also has a 68880 maths co-processor for the really heavy number work. They have also enhanced the Amiga custom chip set to provide an even higher level graphics capability. In fact, that is what may well turn out to be the A3000's best shot in the workstation market - as a midrange, multitasking graphics workstation that beats the opposition all ends up on price.

It will give the professional and corporate user the accessible means to carry such applications as CAD/CAM, desktop publishing, computer-based training and, of course, animation and graphics work. Included in this will be, naturally, the area that is currently making everyone buzz from IBM on down, multimedia, which offers the fascinating but as yet unexplored territory of the integration of video, animation, graphics, sound, speech and text.

Commodore has ensured that the Amiga 3000 has the universality that workstation users demand by building its architecture to support a variety of platforms including good old MSDOS, the increasingly-popular UNIX, DECNET, X11, REXX, AppleDOS and even BBC BASIC. So, for example, it can even be used as a low cost but highly intelligent graphics workstation/terminal for existing DEC or SUN systems. Smart move that.

There is no doubt what will sell this Amiga - power and versatility at a low price. The top price for an Amiga 3000 - the 25-100 (running at 25MHz with a 100

MB hard drive, 1 MB chip RAM, 1 MB fast RAM - expandable to 16MB) will be only £3299, which might sound big bucks to us but is practically dirt cheap in workstation market. And the range goes down to the 16-40 (16 MHz and 40 MB hard drive) which checks in at a touch under £2500. That probably means if you talk nicely to your dealer by the end of the year you might get it for around the £2000 mark.

For those of you who have been on the Amiga scene long enough, your memories might go back to 1986 when the 68000-based, 256K, single floppy drive Amiga 10 came spear-carrying on the computing stage with a price tag just about the same size as the A3000 16-40. 256K and 4Mz, that was big stuff... But who had heard of workstations then?

AmigaDOS V2.0

To go with the new A3000, CBM has developed a new version of AmigaDOS. The multitasking 2.0 features improved icons, upgraded file-locking, improved screen-resolution - 640 x 480 productivity mode and increased security. The new version also supports AMIGAVISION, the icon-driven authoring system for multimedia applications.

Zorro III Expansion Bus

The Amiga 3000 has incorporated a new Zorro III expansion Bus which provides full-featured, 32 bit address and data path access

to expansion devices, while it remains compatible with existing Amiga 2000 Zorro cards on a cycle-by-cycle, slot-by-slot basis. Interestingly it even enables users to run 16 bit and 32 bit cards simultaneously.

Display Enhancer

The A3000's display enhancer can be used with a VGA or multiscanning monitor to provide improved video performance to the majority of software applications. The device deinterlaces interlaced 15.75Khz video to provide a non-interlaced display. It also detects non-interlaced operation and leaves it without attempting to interlace. Instead, it will scan double to remove unsightly scan lines.

Next Month, AUI will examine the A3000 under workstation conditions.

QUAD

More useful tips from our 68000 mentor – Giulio Zicchi. This month – How to access the joystick ports.

In this month's Quick and Dirty we are going to take a look at the joystick ports on the Amiga, which differ slightly from the norm. On a machine such as the C64, the joystick registers resided in a Complex Interface Adaptor chip and were memory mapped as an addressable register in which a bit set or cleared represented a switch open/closed on the connected joystick.

The Peripheral Interface chips used in the Amiga are still memory mapped as addressable registers but some of the bits at these addresses pulse which makes reading them not quite so straightforward.

The connectors used on the Amiga are the standard 9-pin D type which are de rigueur on nearly every make of home computer now. The two addresses that we are interested in for the purpose of reading a connected joystick are currently \$DFF00A and \$DFF00C for ports 1 and 2 respectively and fire buttons are read at bits 6 and 7 of location \$BFE001 (bit 6 for port 1 and bit 7 for port 2). I use the word currently as it is wise to bear in mind that future versions of the Amiga may map the custom chips elsewhere in memory.

These registers are read only word registers in which the current state of the right joystick switch is represented by bit 1 being set and the left switch by bit 9 being set. To calculate the state of the other two directions, however, it is necessary to generate the exclusive-or of bits 0 and 1 for the down switch and bits 8 and 9 for the up switch. This is easily accomplished by copying the read state of the register into another data register, shifting right one position and then sorting the two data registers together before polling the relevant bits.

If you now turn to the listing you will notice that I have assembled the state of the currently set bits into the lower five bits of D7 where they have the following meaning:

0	UP
1	DOWN
2	LEFT
4	RIGHT
5	FIRE

This is a throwback to my C64 programming days but is the way I find most convenient, enabling a call to JOY READ to return the current status of the port.

This short program also illustrates use of the DOS write routine to output text to the CLI. Once the library is successfully opened, a call to OUTPUT should return the current output handle for the CLI from which the program is started. The WRITE routine requires three parameters in order to perform correctly. The handle is passed in D1, a pointer to the buffer where the text is stored is passed in D2 and the length of the text is held in D3. This is also a very convenient way of sending debugging information from most programs to a chosen CLI window.

G.Z.

```

opt    c-,d+
includr "sys/include/"
include libraries/dos.i
include libraries/dos.lib.i
include exec/exec.lib.i

JOY1DAT    equ     $dff00c
FIRE_BUTTON equ     $bfe001

        lea    doslib,a1          ; pointer to library string
        moveq #$00,d0
        callexec openlibrary      ; attempt to open
        tst.l d0                  ; D0 holds library base
        beq    error               ; else error
        move.l d0,_dosbase         ; store pointer
        calldos   output           ; get CLI output handle
        tst.l d0                  ; zero = problem....
        beq    error               ; so quit
        move.l d0,handle           ; else store handle
loop
        bsr.s joy_read            ; call port two reader
        bsr.s print_status         ; print to CLI

```

cont. on next page

QUAD

continued

```

        andi.b #$40,$bfe001      ; test for left mouse
error      bne    loop          button
           ; loop if up
        moveq #$00,d0      ; clear for clean exit
           rts

JOY_READ
        moveq #$00,d7      ; clear signal reg.
        btst #7,FIRE_BUTTON ; check fire button
        bne    jr_get_switch ; not pressed
        bset #4,d7      ; else set fire bit
jr_get_switch
        move.w joydat,d0      ; get joystick status
        btst #1,d0      ; bit 1 = Right
        beq    jr_tryL      ; no
        bset #3,d7      ; else set Right bit - exit
jr_tryL
        btst #9,d0      ; bit 9 = Left
        beq    jr_tryD      ; no
        bset #2,d7      ; else set Left bit - exit
jr_tryD
        move.w d0,d1      ; calculate the exor for U/D
        lsr.w #1,d1
        eor.w d1,d0
        btst #0,d0      ; bit 0 = Down
        beq    jr_tryU      ; no
        bset #1,d7      ; else set Down bit - exit
jr_tryU
        btst #8,d0      ; bit 8 = Up
        beq    jr_done      ; no
        bset #0,d7      ; else set Up bit - exit
jr_done
           rts

PRINT STATUS
        tst.w d7      ; d7 = 0 = don't print
        beq    print_done ; so exit
        move.l handle,d1 ; handle for write
        move.l #up_string,d2 ; pointer to first string
        move.l #offset,d3 ; number of bytes to write
        btst.b #0,d7      ; now test each bit
        beq    stat_down   ; branching if not applicable
        bsr.s print_it    ; else print it to CLI window
stat_down
        add.l #offset,d2 ; add offset to next string
        btst.b #1,d7      ; test for down
        beq    stat_left   ; no - branch
        bsr.s print_it    ; else print string

```

```

stat_left
        add.l #offset,d2 ; same for left status
        btst.b #2,d7
        beq    stat_right
        bsr.s print_it
stat_right
        add.l #offset,d2 ; same for right status
        btst.b #3,d7
        beq    stat_fire
        bsr.s print_it
stat_fire
        add.l #offset,d2 ; same for fire status
        btst.b #4,d7
        beq    send_CR
        bsr.s print_it
send_CR
        add.l #offset,d2 ; send carriage return
        move.l #$01,d3
print_it
        movem.l d1-d3/d7,-(sp) ; save relevant registers
        calldos      write ; call DOS library routine
        movem.l (sp)+,d1-d3/d7 ; retrieve registers
print_done
           rts

doslib      dc.b "dos.library",0
dosbase     dc.l 0
handle      dc.l 0
up_string   dc.b "UP"
           even
offset      equ   *-up_string
dc.b      "DOWN"
           even
dc.b      "LEFT"
           even
dc.b      "RIGHT"
           even
dc.b      "FIRE"
           even
dc.b      10
           even

```

All of the 68000 assembly language articles in this series were written using the Devpac Amiga assembler from HiSoft. Consult your assembler manual to reconcile any differences.

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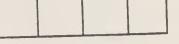
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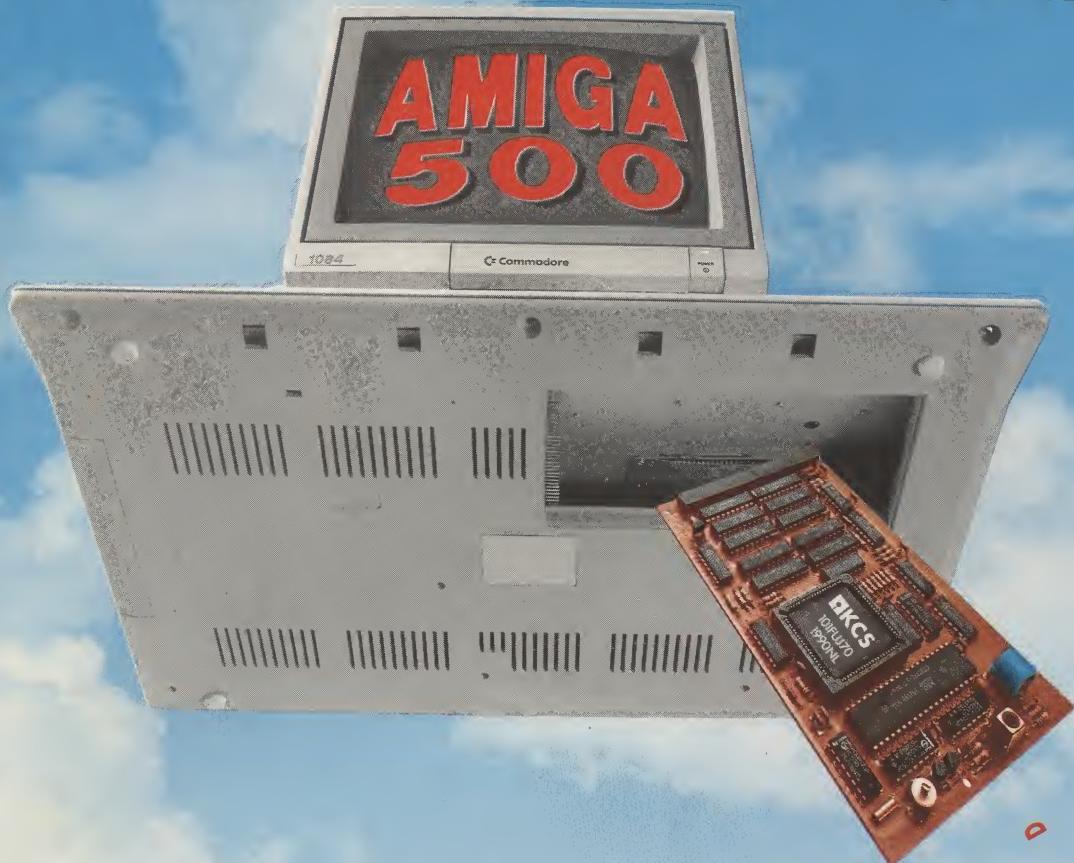


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How To Be An

Anyone can become an Amiga artist, says Peter Lee, providing a look at the ins and outs of dominating the computer's graphics



There are generally three steps most Amiga artists go through on their way to success:

Step one - you see immaculate screen shots from the Amiga showing photographic-quality images of Egyptian burial masks. This is the computer for you!

Step two - you save up enough to be able to afford one of Commodore's little gems. Forget the manual - where's this plug go?

Step Three - you try and draw something. The next sound you hear is probably someone's hopes shattering.

Lured by the prospect of owning the world's finest graphics home com-

puter, many people fail to come to terms with the hard-edged reality of painting with light using a clumsy plastic mouse instead of a responsive, articulate pen or brush.



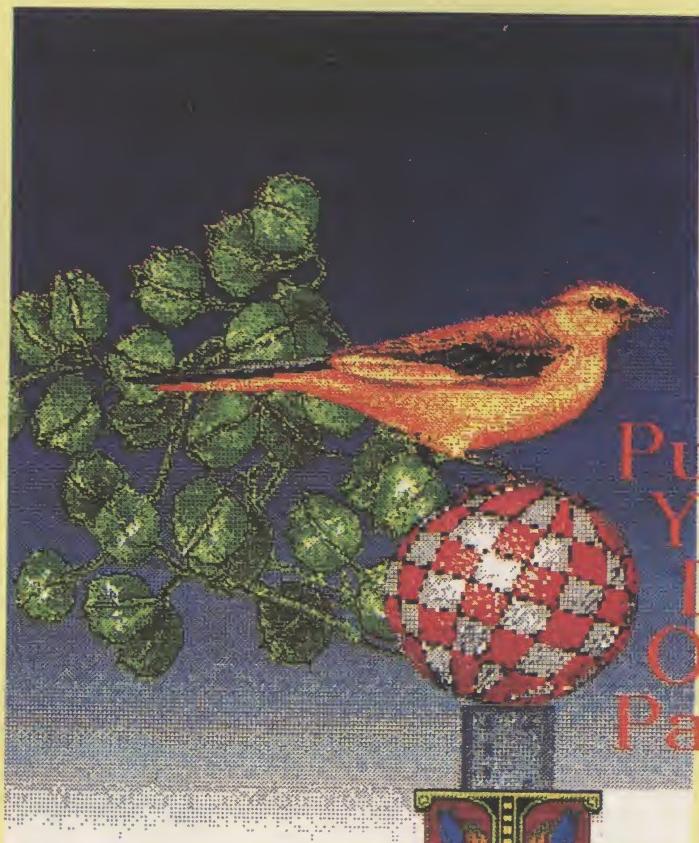
Amiga Artist



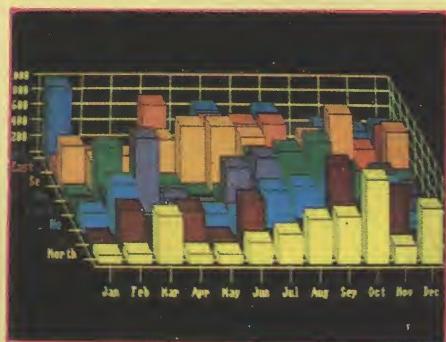
But to be fair, only a few actually pack up and offer the machine at a bargain price in the computer trade ads. The rest either muddle along without knowing their antialias from their dither, or actually do manage to develop the techniques special to computer artists.

I hope to give a broad outline of Amiga graphics, beginning gently with first principles, and evolving into more complex topics aimed at helping you achieve some professional effects.

And even if you cannot draw a tree or a car, the Amiga is versatile enough to allow the most timid of artists to create excellent individualistic works, together with simple introductory screens of text and texture to use in your own programs. The real beauty of computer art is that the art package of your choice



Put
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Dreams
On
Paper



simplifies many aspects - if you make a mistake, just blot it out and try again - nothing is ruined.

Having coached a number of non-artists I have to say absolutely anyone can create something of value from a blank screen using any of the art packages available. If you can't, you're just not trying.

MODES AND THEIR PROBLEMS

Although it won't help you create better images, knowing how the Amiga handles graphics will help you understand the concept of computer graphics

continued on page 37



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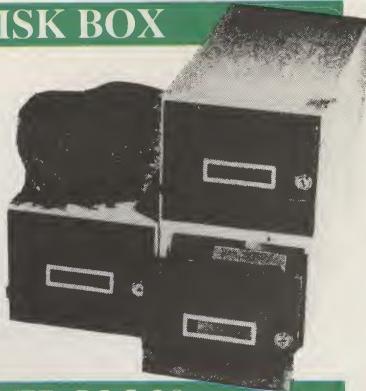
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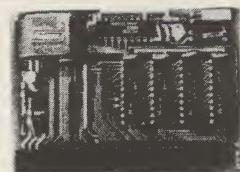
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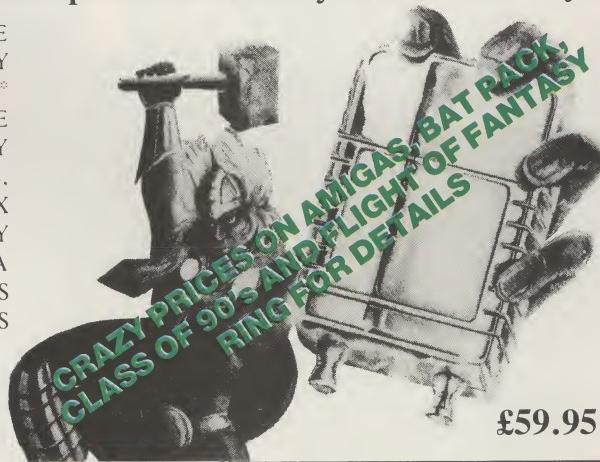
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generally, and become aware of the limitations you face as a light-artists.

The smallest graphic unit is the pixel; all images on your screen are composed of these tiny building blocks.

Pixels come in varying sizes, which depend on your screen resolution. At the lowest resolution it is easy to see their effect by examining an angled line. The edges can appear with the familiar saw-tooth pattern which can ruin your work. You see, pixels are not always square, so when you draw circles or angled lines this tends to manifest itself in uneven edges.

The glib answer is to select the highest possible resolution available to you; but for useful work, you may find yourself limited by lack of memory. If so, it is probably wise to be stoical about the problem and accept it for what it is - an unavoidable fact of life.

Graphic manipulation relies heavily on the Amiga's scarce CHIP memory. Amiga 2000s are now being sold with 1 megabyte of this as standard, but the countless thousands of other users are stuck with 512K.

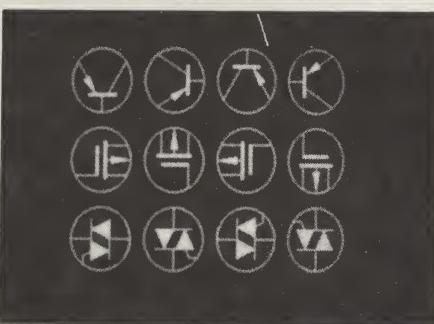
And while this is adequate for low resolution work, it inhibits full use of many graphic programs where brush and pattern work is needed. These need CHIP memory to work and no amount of extra add-on memory will get you out of this particular pitfall.

The lowest resolution available is 320 pixels wide by 256 deep; high resolution is exactly double that. Anything from 2 to 32 colours are normally available on screen at any one time. But luckily Amiga developers left scope for a 64-colour mode, called halfbright. This uses as its foundation 32 colours, and then provides a further 32, based on the standard palette but with only half the luminance (hence the name). This mode is relatively memory-hungry, but opens the way to some outstanding effects with shadows, highlights, and the creation of objects with clear depth.

Even more bizarre is the Amiga's HAM (hold and modify) mode. This permits the maximum 4096 colours on screen at any one time. Special art packages have been developed to utilise this tricky display mode, which is hard to control because of the way pixels behave. Altering the colour of one pixel can change the adjacent one, so care needs to be exercised.

The main professional workhorse is the high res display, which even so does have its disadvantages; on the plus side this 640x512 mode almost eliminates the jagged edges on lines, and is consequently the first choice for video artists who wish to use their creations for titling.

But - and it is a big factor - the number of colours available in this mode is cut to 16; this is fine for text, and for some simplified graphics. But in-



volved work does cause problems.

One half-satisfactory way around this is to mix colours at pixel level; by creating pixel patterns of different colours (using your art package's magnify function), the perceived colour palette is greatly enlarged. The eye is easily deceived at this resolution, even in medium resolution. But beware of using this dithering technique in low resolutions as the chequerboard nature is all too apparent - and in any event, with a range of 32 or 64 colours on screen, you will rarely need to resort to this tactic.

Another bugbear of high-res is the interface flicker, which although annoying is something you have to live with unless you can afford a high-persistence monitor or a flicker-fixer for the Amiga 2000 (and even this does not work with the standard Commodore Amiga monitor).

TOOLS OF THE TRADE

There are a number of input devices available to Amiga artists - you don't have to stick with the mouse. Other options include a light pen or a graphics tablet. The light pen is too contrived for my liking - drawing on paper is not the same as holding out an arm and moving a stylus around.

There is no doubt that technically light pens are a clever idea; by firstly running software, the pen's location can be tracked within the screen's limits. Pens have buttons to mimic the mouse, so in effect you have total control of the on-screen cursor.

Outstretched arms soon tire, I find,

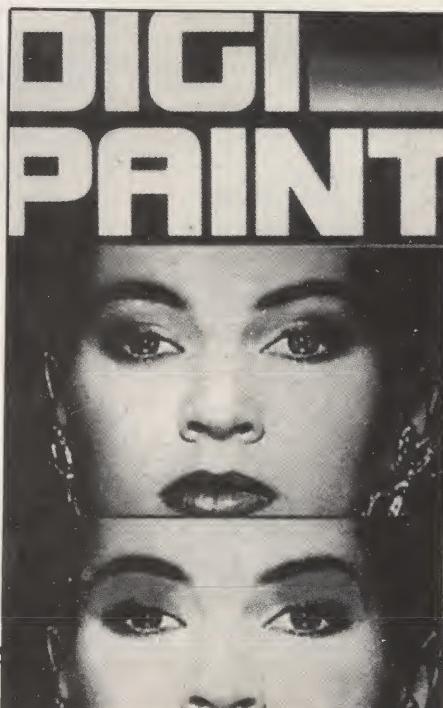
and there are some constraints on the sensitivity of the pen, which can be thrown out of whack by a dark background colour.

Graphics tablets are a better option, allowing a pen-like stylus to be drawn across their surface, translating the movement onto the screen. Unfortunately this is a relatively expensive graphic tool for the home artist, but provides good positive feedback. Using this device it is also possible to trace over original artwork, laid on the tablet, and save a lot of time.

They are also a sound investment for designers using CAD (computer aided design) programs; this is a highly specialised use of Amiga graphics, for such things as plans or printed circuit boards.

FINALLY...

Anyone can be an artist on the Amiga - the graphics packages line the shelves just waiting to unlock your creative spark. And provided you get the double benefit of enjoying doodling for its own sake, as well as feeling pleased at the end result, then who cares what it looks like? P.L.



Voice Box

It might be of help to the readers of Amiga User International to follow the difficulties and triumphs of an ordinary computer user in upgrading from a Commodore 64 to an Amiga 500. The pitfalls and expense of such an upgrade is not in the blurb put out by the manufacturers or the retail outlets.

There appears to be a conspiracy of silence between those who manufacture and those who market soft and hardware to play on the ignorance of the simple user who is not a computer buff. The magazines and journals fall into this trap and are filled to overflowing with articles not only for those who are programmers or games players.

I am a consultant surgeon who writes a few scientific articles and earns a few bob on the side as a writer. My non-scientific output consists of a regular column in a medical weekly, Hospital Doctor, and occasional articles in other Medical periodicals. I don't play computer games as I don't have the time or interest in them, although my assorted children occasionally do. I also use computers, via commercial software, in the control of my clinical practise and for the storage of data both for record and research purposes.

I came to computing via a friend who had a spare Tandy TRS-80, Model 1, level 2 with a 16k RAM. He gave it to me in 1980. When that packed up, after I had written two of the finest novels of the century (as yet unpublished), I learned to use a spreadsheet and found out a little about Basic, I was disconsolate and lost. My wife a fine understanding woman, bought me a C-64 and 1541 disk-drive as a present.

I already owned an Epsom MX80/FT 9 pin dot-matrix and a disk drive and the mail order company supplying the C-64 assured the spouse that the word processor and spreadsheet software they supplied with her order would work with the computer.

Several weeks of negotiations, threats and wingeing led me to be the satisfied owner of Easyscript and Swift, word processor and spreadsheet respectively. The database program supplied with the C-64 was acceptable and I was in business. I started writing regular articles for Hospital Doctor after having had my first couple of contributions

published in BMA News Review. I was now a most contented user.

Not being satisfied with the simplicity of Easyscript, I purchased Superscript and found that a most superior program and have used it with great pleasure for the past two years.

After a few months I purchased Jiffy-dos. The blurb said that installation was a doddle, 'desoldering of the Kernal chip is required in some computers'.

Nobody told me that my skills as a surgeon would not be up to the required level in the removal of the chip and that in trying to make the switch I would destroy the board under the chip.

Instead of sending the C-64 to a professional for repair I decided to go upmarket: I bought an Amiga 500 educational package, consisting of the computer and a myriad of software. The important items for me are the wordprocessor, the spreadsheet and the database.

The latter two are clearly first class - MaxiPlan and Superbase Personal - although they suffer to a degree from one of the major problems of the third. The word processor is KindWords 2.0 as part of The Publisher, a desk top publishing program. I am accustomed to and need to use a stand alone word processing program, such as a Superscript for the C-64. Programs such as Kindwords, like the Geos word processor for the 64 and 128, are specifically designed for publishing (DTP) and are much too cumbersome for daily workhouse use.

When you upgrade from the 64k, not all of it usable, to 500k you expect a major expansion of usable memory, don't you? Do you get it? You do not.

What you get is software which must be so sloppily written that, although it has barely any more features than that written for a 64k machine, occupies so much of the memory of the 500k monster that there is hardly anything left for the poor old Amiga user to use. Almost everything you touch seems to need a second disk drive (about £100) and another 512k memory expansion (about another £100).

Not that the need for the second drive and more memory are simply software problems. It would seem that

Life is neither simple nor problem free. But, as someone said, 'Who promised it would be?'. Consultant Surgeon Mervyn Rosenberg feels very cut up about the problems of as simple-seeming an exercise as upgrading from a 64 to an Amiga. Here is his lament.

when the Amiga has loaded anything from its Workbench you can never get rid of all of it from the memory and, if you want to run another program, there is a decreasing memory available every time you leave a program so that each successive programme has less memory available to it. The only solution appears to be to reboot the machine each time - and reloading the 'Workbench' takes a lot longer than rebooting the old '64'.

In trying to choose a wordprocessor which will fit my requirements, my local dealer was about as much help as an ice cube in an igloo and there seems to be nowhere you can get advice from in the commercial marketplace.

So what did I do? Well, I saw an advert for a 64- Emulator. I phoned the advertiser, Calico Software, was told clearly and concisely that the emulator would do exactly what I wanted, ordered it and received it in very short order indeed. I am delighted to report that it does all, and more, that it claimed. I was able to rescue my data from the C-64 days of the last month and I can also use most of my programs for that humble but effective machine. I've even got Superscript back - at half the speed at which it worked on the 64!

So where do I go from here? Well, I've written this on KindWords. I will have to save it, reboot the program, reload the script and check the spelling, save again, reboot and print it. All that is necessary as 500k is not enough memory.

That's pretty strange as 48k was enough to do all that on the old TRS-80. Not only that but my first two machines allowed me to print italics, condensed, enlarged, bold and double, on the same printer I'm using now. That's more than I can offer with KindWords and 500k (or is it 512k?) of the Amiga. I can only use all those features if I buy another 512k and I can only get away from spending the rest of my life disk-swapping if I buy another drive.

Perhaps some of the aficionados who read Amiga User International would like to write to me about solutions to my problems and they can be published for all us duffers to read.

M.R.

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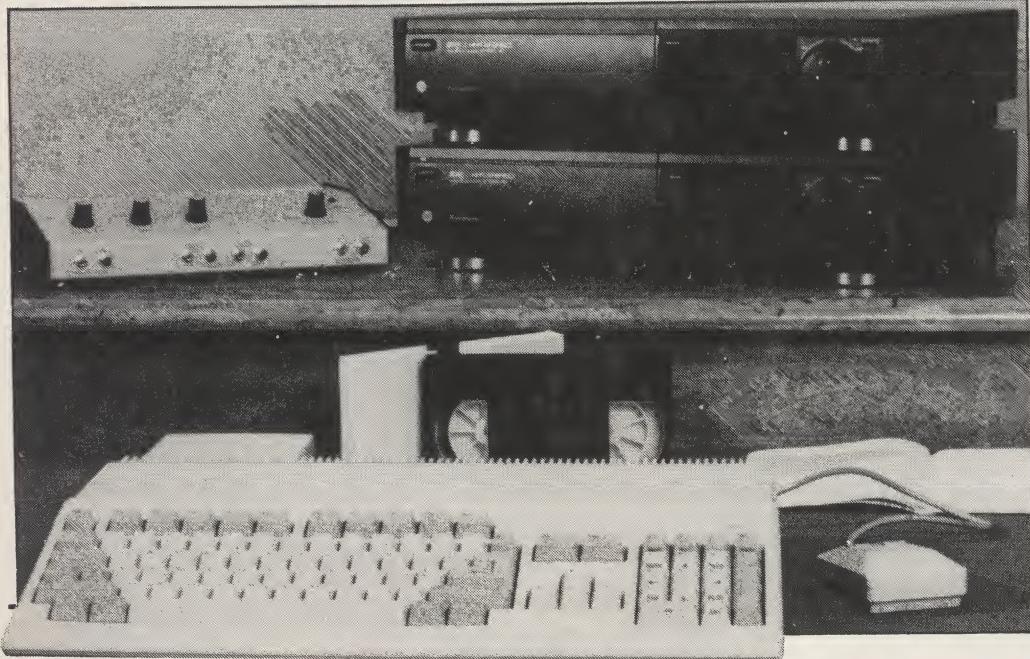
The Amiga is the heart of a new professional level video editing system. KRP VIDEO SERVICES LTD. a Scottish based company have just released details of their "revolutionary" editing system which makes use of 2 specially modified Panasonic FS100 S-VHS VCRs and a Commodore Amiga 500, along with a Rendale Super 8802 S-VHS genlock and purpose built timecode box and software.

The system allows previously recorded as well as newly shot camera footage to be invisibly digitally TIMECODED in a similar way to that used by broadcast companies on their expensive online suites. All the decisions about edit in and out points are made on a visibly coded copy allowing you to refine the edit without risk to the camera original tape.

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camera tape in the source machine and sit back. All the editing is then computer controlled, making the final production frame accurate without the usual problems.

All the hardware and software is supplied and installed with one day's training for the introductory price of £5,999 including VAT, (UK mainland only), KRP say, bringing high quality professional level editing within reach of many more organisations. Contact: KRP VIDEO SERVICES LTD., Buchley Lodge, Balmuildy Road, Bishopbriggs, Glasgow G64 3QQ. Tel. 041 762 2510.



MARKET GROWS

Over 700,000 PC's were sold in the UK last year, making the market worth £1.6 billion.

This represents a 30% growth over the previous year, according to a report by market researchers Context.

IBM is the leader in the market, with 24.7% volume share. Amstrad is second with 16.7% - but only 6% by value. Compaq is third with 13.4%. The most recent figures show Commodore have gained 1.6%. That may not sound much but it is better than its past record.

Amstrad's market share fell last year, from 18% at the start to 11% by December. In 1987 Amstrad sales were for 30% of the total market.

GOLD DISK SPEEDS UP PRODRAW 2.0

Gold Disk is releasing a faster, significantly enhanced new release of Professional Draw, its object-oriented colour graphic design and illustration tool.

In addition to a five-fold speed increase over previous releases, Version 2.0 of Professional Draw has an Auto Tracing feature that can generate objects by automatically tracing over bit mapped images.

Professional Draw 2.0's proprietary object manipulation algorithms can also "blend" any two objects, colours or lines, by automatically drawing extra transitional

images - such as the images that blend a star into a circle.

Other features added to Professional Draw 2.0 include the ability to write text along curves and perform colour dithering, which yields over 1,000 apparent colours on screen at once in Hires mode.

Professional Draw 2.0 sells for \$295.00 and will run on any Amiga 1000, 2000 or 2500 with at least 1 Mbyte of RAM. Contact: Gold Disk, P.O. Box 789, Streetsville, Mississauga, Ontario, Canada L5M 2C2 or call 416 828 0913.

FAST AND FURIOUS TRIBAL

Electronic Arts has announced the release of a new futuristic sports game. Tribal is an original product developed for the Amiga by the UK artist group Eldritch The Cat, Marc Dawson and Steve Weatherill.

In Tribal eight teams come together to play in either a knock out tournament or through the 21 weeks of the league. Each match is played by three teams, on a pitch of five quarters and three times halves. The puck is set up in the central quarter and can be knocked into one of the other four quarters. In three of these one player defends while two attack, while in the final quarter, the "frantic zone", each team has a goal.

At any one time three players can use the machine to control the teams playing a match using the joysticks and keyboard. The player has the pick of eight team members to select one for the defending zone, one for the "frantic zone" and one each in the two attacking zones.

Tribal features fast and smooth eight directional scrolling and eight different pieces of music. It also contains options to vary the game from rapid arcade include the strategic use of statistics and leagues.

FUTURE BASKET BALL

Hewson are producing Future Basketball which has a full management system with 6 skill levels, a two player mode, two different league divisions and three pitch surfaces add to the difficulty.

Future Basketball is programmed by Imperial Software with music from the Maniacs of Noise and is due for release Summer 1990 priced £19.99.

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Lift Off for CD ROM



A recent report has estimated that up to the end of 1989, there were only about 7000 CD ROM drives being used in the U.K. In the rest of Europe, there numbered no more than 60,000. In the U.S., it is thought that there were some 350,000 with another couple of hundred thousand spread across the world, mostly around the Pacific Rim, say 600,000 in all. CD ROM technology is not new. It has taken over six years to reach that figure which is still puny in computing terms but now lift-off, critical mass, the moment of CD ROM truth may have arrived. For it is predicted that by the end of this year, that 600,000 so far, will have doubled. And CD ROM growth from there on is likely to be exponential.

One reason why the CD ROM scene is changing so quickly is the move toward multimedia — the combination of moving pictures, stills, graphics, sound and text and anything else you can throw in — that is grabbing the imaginations of all involved in the development of computing.

Multimedia coming onto personal computers like the Amiga seems likely to have an amazing growth potential. No-one knows how much has been

spent on multimedia for PCs so far but an educated guess, up to the end of 1989, might be around the £200 million mark. It is predicted, however, to rise to £10 billion, yes billion, per year within five years.

With a market as juicily rich as that, it is not surprising that Commodore have seen a future for themselves in that golden field. So too have names as well-known as IBM, Compaq, Phillips, Microsoft and Lotus, who have just launched in Europe a financial database CD ROM called Lotus Source that has already been very successful in the U.S.

No software?

The obvious comment that is always made at the introduction of a new computing medium that there is no software for it is already being leveled at Commodore's CDTV. But that was said about the Amiga itself when AUI first started. Those Amiga-doubting voices have become rather hushed these days. The same will happen for CD ROM. In fact, there is already a fast growing selection of software available. It may not be what you expect or even achingly want but for high level applications for business use it is

Anthony Mael reports on the background to the launch of Commodore's CD ROM Amiga

Commodore has launched an Amiga hidden, almost buried, beneath the guise of a CD ROM player. Its CDTV, as it calls it, careful not to alarm the non-computer using public, is, CBM says, the first product of its type to bring CD ROM (compact disk read only memory) into the consumer market.

The CDTV looks like an ordinary CD player or a video recorder but it really combines audio CD, Amiga computing technology and even infra-red remote control. It is aimed at the leisure market but also at professional applications running from educational to the accelerating interest in multimedia.

"It is on the rear panel that most computer users would concentrate."

Commodore believe that what is necessary to get a technology accepted by a mass market is to make it easily understandable. Nothing could be easier than the control mechanism they have adopted for the CDTV. It is just the normal remote control pad of the home TV set. So people who use a CDTV will need no computer or keyboard skills, just the ability to work a simple push-button remote controller. So goodbye technofear?

That for CBM could bring a huge new market of those who previously would not have been interested in or would have been nervous of a

continued on page 44

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computer.

For others less hesitant about technology, the CDTV will also be operated by all the normal interfaces including keyboards and joysticks.

700 Floppies

The CDTV player uses CD-ROM disks similar to conventional audio CDs but with a capacity of 250,000 pages of text, equivalent to 700 floppy disks. So this simple looking piece of equipment will be able to handle applications far larger and more powerful than standard computer-based versions - applications which can liberally use music, moving pictures, still graphics and text simultaneously.

At the heart of the CDTV system is something we all know and love - Motorola's 68000 16/32 bit central processing unit which with a operating system not a million miles from the one I am using at this moment might well be called a computer. The CDTV's Amiga, for yes, it is she, will come with 1 Mb of RAM and all CBM's girly-named chips for graphics and audio processing.

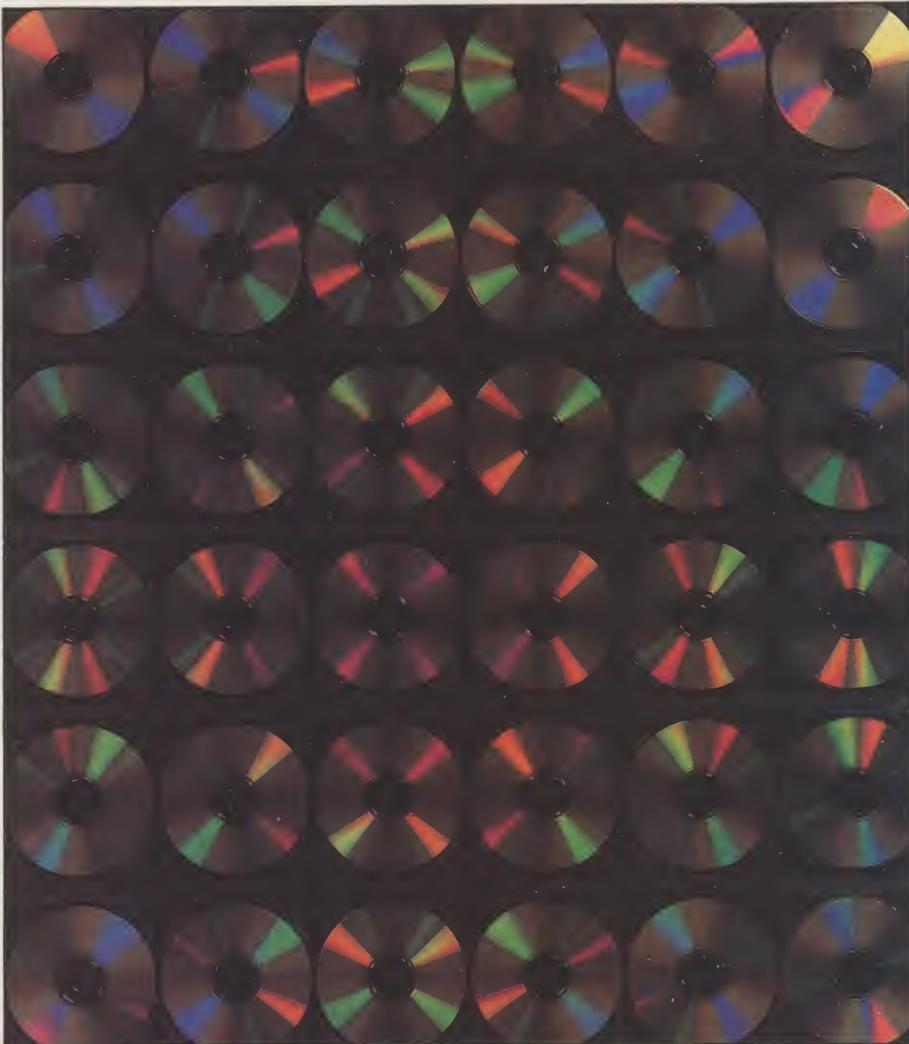
The whole thing is a fully-functioning audio CD system and you can play your normal CDs on it be they Manilow or Mozart. CBM have proudly announced that when the CDTV is in audio mode "It is fully programmable and features 8-times over-sampling and dual 16-bit D/A converters." But as mere computer users, we do not actually know what that means - but no doubt we shall find out in due time.

The front panel display provides time, track and volume information together with a 24 hour clock. And there is also a stereo headphone jack.

It is on the rear panel that most computer users would concentrate. And it is there that most interactive applications, and after all that is what the real technological breakthrough is about, happen. There is an external disk drive interface, serial modem port, a parallel printer port and a standard port for downloading programs to video recorders. It will work, of course, with any TV or RGB monitor and is happy to take PAL.

Why should this particularly interest you, the AUI reader who presumably has an Amiga and so already has the joys of AmigaDOS and the other advantages of the best popular technology available? Because CD-ROM is not just another storage medium. It offers a huge opportunity not just for Commodore to sneak its complex Amiga baby onto the unsuspecting shelves of the TV watching masses but for all of us. 700 floppies... you can do a lot with that power.

You can receive already created material in virtually any form: moving pictures, text, music, business graphics,



already there, according to Nicholas Broome, Managing Director of Future Office Systems who have a solid catalogue of informational CDs i.e. not the kind you will buy for easy listening down at Our Price stores.

These informational CDs, sometimes costing several hundred pounds, range from a National Directory and Population statistics to the U.S.A. Patents Database and the Journal of the American Cancer Society, with technical disks like CD Gene, a genetic sequencing database and Material Safety Datasheets, for the handling of hazardous materials, and a number of other specialities or oddities.

For "Word Processing Fanatics"

The average guy in the computer street might not be too thrilled by those I've listed and a number of others equally recondite but how about the ubiquitous Guiness Book of Records with animated pictures and sound effects, a hypercard-based fantasy game called The Manhole, a visual compendium of the world's aircraft, or my personal favourite, Bookshelf described as for writers, trivia buffs, editors, gift givers - I

don't see how those last two fit together! - and word processing fanatics." Word Processing Fanatics" I love that one! We all know them, don't we?

Bookshelf is a collection of "The ten most useful reference tools" including a full dictionary, Roget's Thesaurus, a world almanac, a manual of style, a dictionary of quotations (from Mozart to Mick Jagger) and lots more lovely stuff to distract you enough (except for "word processing fanatics") so that you never get any writing done at all!

Of course if you really want something comfortingly familiar on CD ROM you could have the complete works of Shakespeare, thoroughly annotated, of course, or believe it or not, the game that made the Amiga what it is: Cinemaware's Defender of the Crown. In the U.K. that first of the great Amiga games was distributed by Mirrorsoft. And I suspect that the person responsible for getting that classic game onto CD ROM was erstwhile Mirrorsoft Chairman Jim Maconickie. Now, we hear that, ironically, the well-liked Maconickie, whose perspicacity it was that brought Defender of the Crown to Europe and who later lost his job at Mirrorsoft, has

surfaced as a consultant to Commodore for its CDTV, of course.

Huge Memory

Future Office Systems' Nicholas Broome says that the best take up so far from their European CD ROM catalogue has been by the corporate users who have not hesitated to pay the relatively high prices for very professional application CDs. The lower priced, more popular titles seem not yet to have found a wider market. But that may be because the number of CD ROM drives in the hands of the general public is still too small. Commodore of course, hope, to change that.

Another company who want to help that change happen is the familiar name of Cumana. They have been supplying ordinary floppy drives for years to the whole range of Commodore and other popular computers. Now they are into the CD drive market and have brought out external CD ROM drives and internally mountable drives for personal computers. Drives such as these are not cheap – the costs running into several hundreds of pounds – but they offer such huge memory, up to 600 megabytes per disk (and they can be double-sided!) that they make the usual 880K Amiga drive seem tiny. And prices, as in all electronic goods, will fall, probably sharply, as demand rises.

Will people buy Commodore's CDTV? Who knows? But at the present estimated price in the U.K. of around £700, their market is likely to be more the business and professional than home. But when CD players themselves came out that was about the price then too

and now you can buy one for under £100.

Extended Architecture

If the market for multimedia really takes off then Commodore is in an ideal position to benefit. One of the problems with multimedia until recently, at least in the MSDOS standard which is going to go on being the most influential even if the Amiga can do so much more, is that to get true animation there was a need for fast screen updates. It had to be at least 25 frames per second. Graphic images can be compressed to less than 5K but to find and decompress them takes too much time. So it wasn't at all easy to use the images and the sound together.

So Phillips brought out something called CD ROM XA (extended architecture). XA, say Phillips, is a way of interleaving graphics and sound on the same track so that they can be accessed closely enough together for the human brain to be unable to detect a time difference. Hence now no slow down and a framerate in excess of 25 per second.

There is one little drawback to the Phillips system. To make XA work you need special chips which at present cost more than £3000 a set. They are called DVI chips. Digital Video Interactive. And what's DVI all about? No doubt Commodore is investing lots of DVI £3000s at this very moment. DVI is next stage in our technological future. If you want to know what DVI is about... well, just keep watching, and reading, this space. You'll read it here first. As usual.

A.M.



anything you like and manipulate it. You can use it to create whatever you want and then employ that interactively.

More Than One Format

The mere presence of a mass market will bring lots more software than is presently available. It will not be confined to the Techie nor the shoot 'em up games player. It can be technical, educational, entertaining even profitable... One of the interesting points about CD ROM is that because the capacity is so great, and the technological medium so simple, after all it's just a simple and quite cheap to produce disk, you can carry more than one format for whatever material within the same disk. That means it will be cheaper for the software manufacturers to put, say, Amiga, ST, PC and Macintosh formats all on the same disk. That should make them think about the prices...

But the whole thing runs deeper than that. Why have the TV or the cassette player or the transistor radio or the calculator sold in such greater numbers than computers which, we have to face it, have largely been bought either for business or by those of us who can manage a keyboard or a joystick without worrying about making fools of ourselves? The reason is, CBM would say, accessibility or real ease of use. Simple controls like switching on and off a light are what most people want to manage. They don't mind how complicated the stuff is they get on the screen or out of the loudspeakers. They don't want anything even as complicated as "user-friendly" standard but things just like everyday controls: the turning on of a tap, the dialling of a telephone. Those are the extremely simple ways that immensely complicated and important systems are brought to the public.

The CD ROM, CBM's CDTV, can make the public happy to use computers because they won't have to know anything technical to get them to work. They probably won't even know that they are using computers. You don't have to know BASIC to make a CD player blast out David Bowie or Beethoven's 5th.

If we, as Amiga users, want to see the technology we enjoy spread to a greater number so that what we do becomes not just a peculiar hobby – don't you hate that word "hobbyist"? – but a part of everyone's life and in return we get access to a much greater range of ways we can use our computers, then we must warmly welcome the foresight of Commodore (Stand up for applause – Gail Wellington!) in carrying the Amiga technology into this new dimension. For once the often-criticised CBM have seen the future and taken the right decision to make it work for all of us.

A.M.

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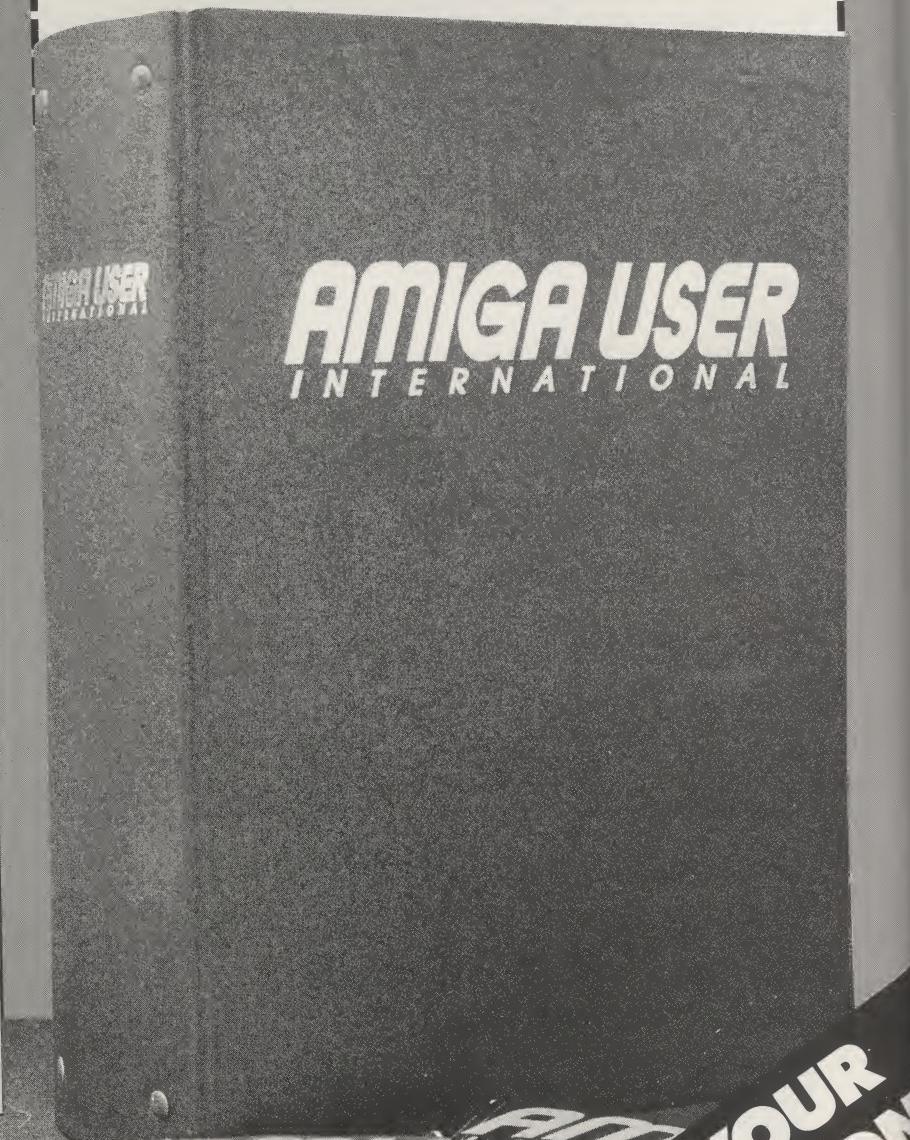
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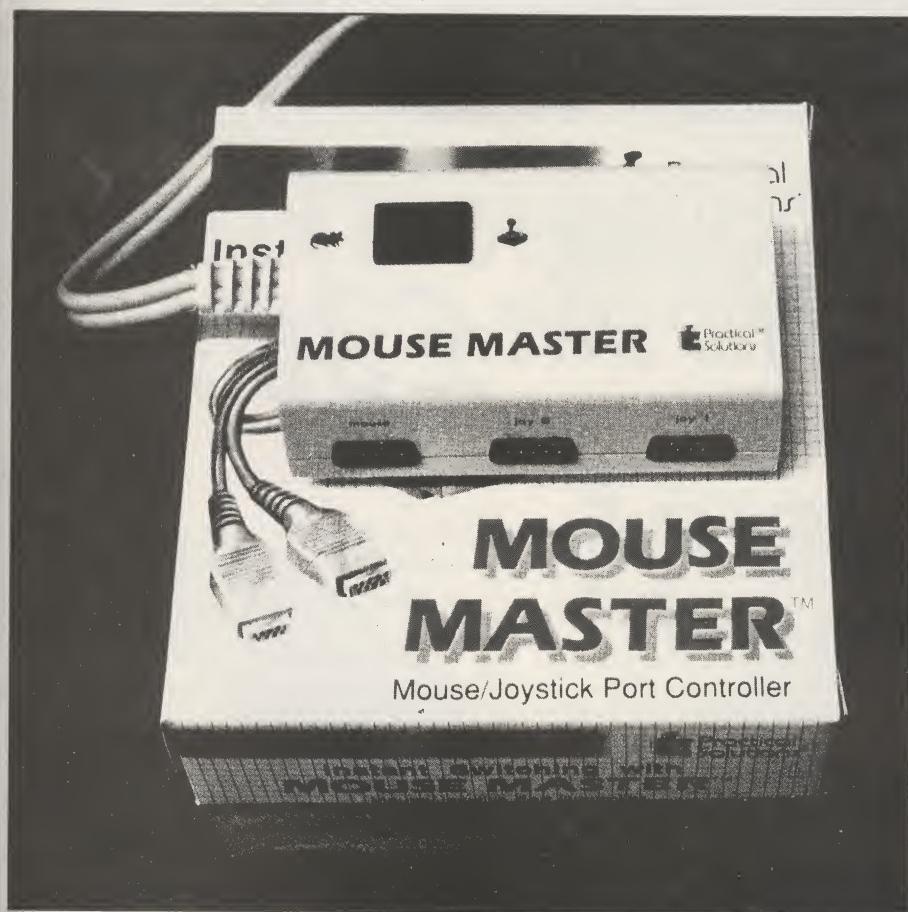
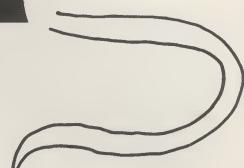
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MOUSE MASTER

Have you mastered your mouse yet? Bill Hardwick has — he explains...



As the number of Amiga users continues to grow, so too does the amount and availability of new and interesting accessories. One such accessory for your Amiga is the Mouse Master from Practical Solutions.

Mouse Master is a small, well-constructed, Amiga-coloured, plastic box. It has two eighteen inch leads coming out of one end. Three nine pin D-Type sockets labelled 'mouse', 'joy 0' and 'joy 1' are set into one side and there is a small rocker switch located

on the top face. There are also two small illustrations on the top, one either side of the rocker switch, depicting a mouse and a joystick.

The leads are designed to be plugged into the mouse and joystick ports on the Amiga. To ensure that the correct lead is plugged into the correct socket, one lead has a beige plus whilst the other is black. A mouse and one or two joysticks are then plugged into the Mouse Master. Once connected the Mouse Master can be placed in any convenient position on either the left

or right of the keyboard. This is a great advantage to A500 users as it means they will no longer have to reach around to the rear of the machine to access the mouse ports. The rocker switch is used to connect either the mouse or whatever is plugged into joy 0 to the Amiga's mouse/joystick port 1. So for games etc. that insist on using port 1 for the joystick, all that is now required is a simple flick of a switch.

It may also be possible to use the Mouse Master to enable Amiga 1000 hardware accessories that use the joystick ports to use the recessed ports of the A500 and A2000. An example of such a device is the SoundScape Sound sampler. Likewise A1000 owners with the external type memory expansion, which usually come very close to the joystick port should appreciate being able to have both ports readily available. I suggest, however, checking with the supplier to ensure that all the necessary pins are connected for your particular requirements.

An internal inspection of the Mouse Master dispelled my initial worry that the switching may have been accomplished using some kind of mechanical device. Instead, it contained a small circuit board that enabled the plugs to be switched electronically. This should ensure a long and reliable life for the Mouse Master.

The use of a mouse and joystick controller such as this tends to be overlooked, until a connector in one of the ports breaks off bends during use and then repairs can become costly. Using a Mouse Master will not only save you the sometimes awkward task of plugging and unplugging your joystick or mouse but could even save you money!

B.H.

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verything is getting bigger. More and more applications, games and even demos today

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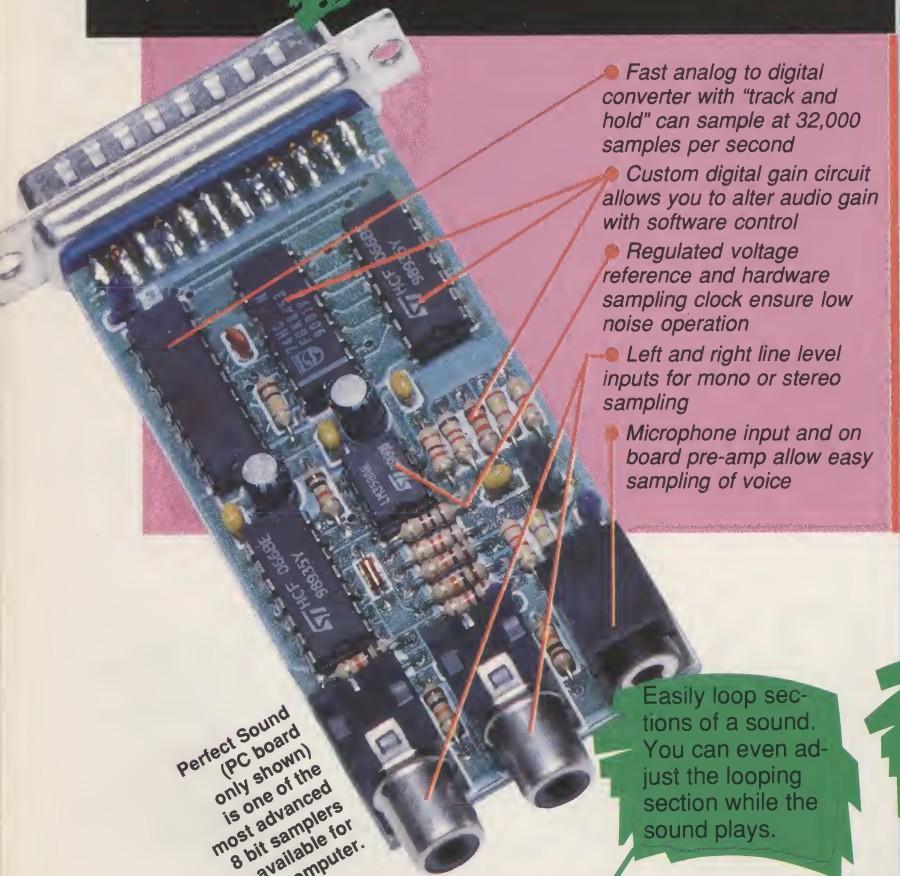
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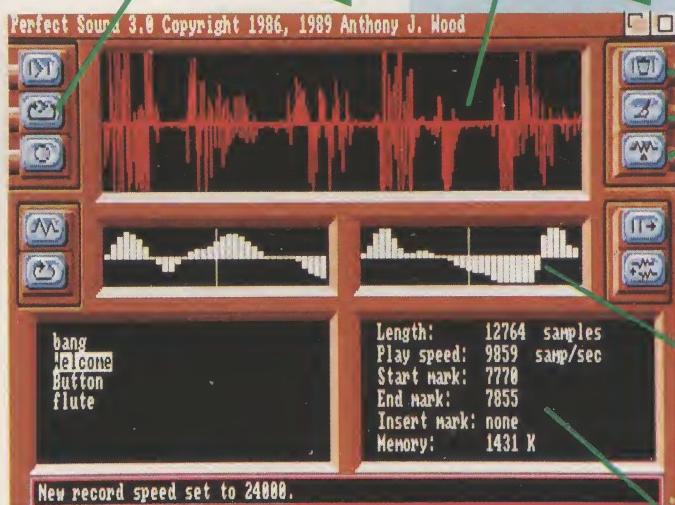
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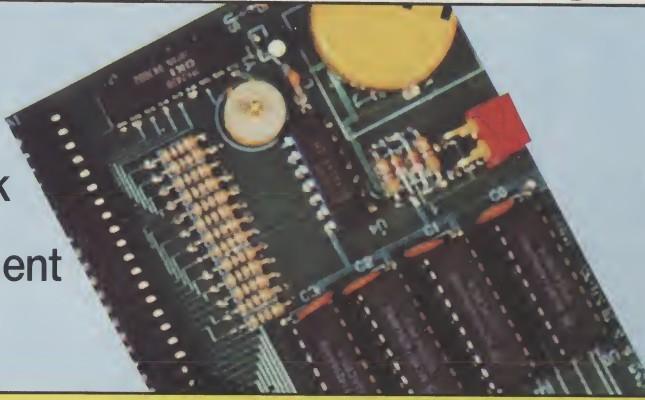
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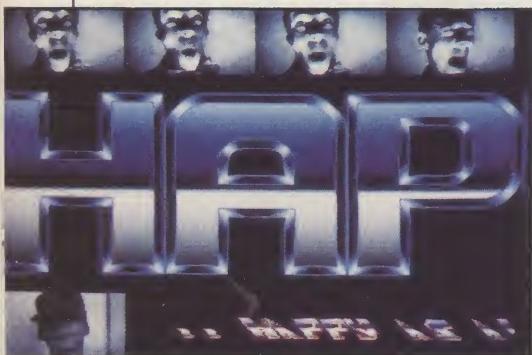
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PD - Music

Music lovers are well catered for in the public domain. As well as all the funky music demos doing the rounds, there's also a number of commercial quality music creation programs available. All of the four programs we looked at this month work in much the same way, taking most of their "inspiration" from the well-established Soundtracker.



The Enhanced Soundtracker Collection (Virus Free PD No. 343)

Four updated and customised versions of Soundtracker head the disk. There are no significant differences between them, so it's just a matter of taste as to which is the better version. Once you know your way around the screen, using the program is no trouble. Samples loaded from disk can be played back "live" on the keyboard, which is arranged as a three-octave piano keyboard. Switching to edit mode, beats, bass lines and the like are more easily programmed by running through the table, repeating patterns worked out in "live" mode. You get the standard four channels to play with, which can at first seem too few for a decent piece of music. Extra meat can be added by sampling a bar of backing from a record, and endlessly looping it.

Also on the disk is Game Music Creator, which is almost exactly the same as Soundtracker, but with a more user-friendly file selector, which can make all the difference when given the choice of the two. Into the bargain, the disk comes with a couple of utilities for extracting Soundtrack music from other people's programs. Not a bad package by anyone's standards.

Music Editor V2.01 (Amiga-nuts United No. 571)

MED is another Soundtracker clone, and one which again goes one better

than the opposition. It recognises DF2: and DF3: (very handy if DF1: is a 5 1/4" drive), and has an easy-to-use sample loop editor. These and other useful little features make MED the best looking, most powerful, and most user-friendly sample sequencer of the lot.

Voices 8 (Amiganuts United No. 544)

Yes, Voices 8 doubles the standard four sound channels. It manages this, it would seem, by "interlacing" the four channels, rapidly switching each channel between two samples. This results in a reduction of clarity in the sounds, but the extra channels allow fuller and more complex music. There's a utility on the disk for converting Soundtracker files to a format which can be read into the main program, to avoid having to write all your 8-track music from scratch. The file selector is a pleasure to use, especially after the brick walls thrown up by Soundtracker, although the tiny text makes the program unsuitable for fuzzy TVs. Definitely worth a look.

If all you want to do is sit back and listen to someone else's compositions, there are three particular music demos we recommend from the current batch. The high point of the Vision Megademo IV (Amiganuts United No. 489) is a happening house track, packed full of all your favourite samples, and there's even a smidgen of melody in there for good measure. Pump Up The Jam and Get Up Get Up have been spliced and faithfully reassembled to good effect on Technotronic (Seventeen Bit No. 608). However, by far the slickest of the recent music demos has to be the Coma demo, included on issue 10 of the Newsflash disk magazine, which is not

accompanied by a brilliant sequence of visuals with the makings of a really freaky video. An essential buy, especially with the demo from Red Sector also on the disk.



Demos

It's not often that you see something new in a demo, but there are some impressive examples doing the rounds at the moment. The Australian Predators Megademo (Amiganuts United No. 472a-b) is a two disk, with eleven loads of hacked sounds and graphics, whirling bobs, solid 3D, a fair bit of user-interaction and a couple of games.

Even better still is the Red Sector Megademo (Amiganuts United No. 364a-b). The highlights include a variation on the now-familiar circular-scrolling text, a spacey rock track, and an excellent vector-ball sequence, along with a bucketful of other classy sound and visual effects.

There's only so long you can be entertained by a ten second animation, but it's worth having a few in your collection, if only to impress your non-computing mates. One of the best around at the moment is The Run (Seventeen Bit No. 591), from Tobias Richter. It's a short 3D car chase sequence, fast and smooth, which is guaranteed to give you an appetite for a quick session on Hard Drivin'. Another pleasant, but less inspiring demo is Busy Bee (Seventeen Bit No. 583). A friendly ray-traced bee buzzes in and out of the screen, transforming your Amiga into an executive-stress relief device.

If on Wednesdays you go shopping, and have buttered scones for tea, you'll no doubt find it irresistible to join in The Lumberjack Song (Amiganuts United No. 565a-b). Requiring at least 1 meg, the two disks house the complete song as performed by the Monty Python team. This is what your memory expansion was designed for!

T.H.



actually public domain, but can still be picked up for next to nothing. What you get is a professional-sounding acid track, and instead of 2 million bobs and a scrolling message, the sounds are

PUBLIC UTILITIES

AMIGANUT Disk 539 - JAZZ-BENCH

Jazzbench is a full Workbench replacement, written by David Navas of Mount View in California, that can be used instead of your usual WB disk.

David has re-written just about all of the normal Workbench routines and incorporated them into the usual WB environment.

At first, the only noticeable changes are the lack of a "Sleepy" pointer and the use of exploding windows, though closer inspection reveals a wealth of hidden power.

All the normal Menu items are present but have been augmented by the addition of a number of useful commands, normally only accessible via the CLI, such as Makedir, Assign and Execute. Added to those are a number of new items, including: "Show Hidden Icons" (which attaches a drawer-type icon to all directories without an .info file, thus enabling you to open the drawer via WB), "Show Text" (lists the contents of the selected directory in a text window) and "Alphabetize" (to sort the entries once listed).

Each window opened also has a "Shrink/Sleep" gadget attached to it. Clicking on this gadget will instantly shrink the window and move the gadget to the left-hand side of the screen, with the window name beneath it. A second click on the gadget will re-open the screen ready for use, thus eliminating all those annoying disk-accesses.

Jazzbench is an excellent piece of software and is highly recommended as an addition to anyone's PD collection.

AMIGANUT Disk 551 - SLEEPY 3

Sleepy 3 is an animated replacement for the "Sleepy" (ZZZ) pointer, written by AUI's technical Guru (if you'll pardon the pun!), Mark Smiddy.

Sleepy 3 needs the new Arpdos library arp.library to work and this is also included on the disk, along with an Arp installation routine to put it onto your WB disk.

The editor allows you to design your own pointer, 16 pixels wide by three times the height of the original, using its own four, independently definable, colours. Up to twenty frames can be defined and the animation speed is user-

selectable. Art programs, such as DPaint, can be used and the resulting images imported.

When you have finished designing, an installation program will copy all the relevant files to their required locations on your WB disk.

Sleepy 3 is also a new type of Public Domain software, called CHARITYWARE. Similar in nature to Shareware (where if you intend to use the program you are asked to send a donation to the author), Charityware asks that you send a donation, in this case just #2.50, to a recognised charity. The charity chosen by Mark, with their approval, is The Spastics Society, so not only will you be getting a super piece of software, but you will also be helping a very worthwhile cause.

AMIGANUT Disk 272 - Wordwright/Amigaspell

Wordwright is a PD Wordprocessor absolutely packed with features that leaves many a commercial product in the shade!

Produced by RTL Programming Aids in Lowell, Michigan, Wordwright is actually four integrated packages; a wordprocessor, an outliner, a mailmerge plus general purpose utilities.

All the usual WP functions are available, the entry of a series of commands at the start of a new document will determine its layout and colour is extensively used to highlight commands, text, search strings etc.

User definable macros can be set up and calculations can be made within the text to determine which of a choice of phrases to print. For example if you were sending out reminders to account customers, Wordwright could automatically print a different piece of text dependent on whether the client was in credit or debit.

What makes Wordwright stand head and shoulders above some other WP packages is its ability to create a "Contents List" of sections of the document which, when selected, will take you straight to that particular section of the text. It also uses the aforementioned Outliner, which can collapse and expand all, or individual sections of the text, thus allowing the document structure to be clearly seen.

All the usual menu items are present, plus some that other WPs don't include,

like "Append Files" and "Block Search and Replace" (Scribble! writers take note!!)

A Utilities window can be opened that contains a calculator, a Hex/ASCII memory dump and access to Amigados and a full, data-dependent mail-merge facility can be initiated at any time.

The disk also contains Amigaspell, a utility that will scan and analyse any document, comparing it to a 70,000 word dictionary and indicating words that it doesn't know.

As if all that were not enough, there is also a PD version of Nag - an excellent appointments calendar that has been previously reviewed in AUI.

A truly excellent, value for money package.

NEWSFLASH Disk 10A

Although not strictly Public Domain, these disks are always packed full of useful programs and articles, hints and tips, demos, music and graphics. This particular disk contains a host of material but two particular utilities caught our (collective) eye in particular.

BOOTX V3.3 is an anti-virus utility that allows you to save and load the boot blocks of any disk as well as checking for any memory resident virus and warning of its presence. It is very simple to use and seemed to work exceptionally well.

MENUWRITER allows you to create a Bootblock Menu of up to 36 entries, each 31 characters long, to either run programs on the disk directly or execute batch files. All the entries are encoded and are therefore protected from alteration with a disk editor. A very neat utility.

Please note: Menuwriter requires arp.library to run correctly.

VIRUSFREE PD Disk 337 - Gigantic Utilities Disk #1

Put together by Toobi Jensen in Denmark, thus disk contains no less than NINETY-THREE different utility programs - far too many to list individually here. They include Disk Utilities, Copiers, Monitors/Editors, Crunchers, Virus programs, Sound, Graphic and Bootblock utilities, plus a group headed Others which includes Blitzfonts, Memclear etc..

A truly awesome collection of just about all the utilities you could ever want, all on one disk!

PD Software Companies: If you would like to be included in this monthly look at what is available in the world of PD, please send a selection of your software, or your catalogue disk to:

Amiga User International, PD Roundup, Finsbury Business Centre, 40 Bowring Green Lane, London, EC1R ONE.

continued on page 54

USING PD

Peter Wright gives you some sharp tips on how to get the best out of the Public Domain

An Amiga computer isn't cheap and if you've shelled out on other ancillaries as well then you probably haven't any money left to buy software! Waste of time buying the bloody thing then wasn't it? Well, what do you do? You go and get hold of some Public Domain disks don't you? There are loads of excellent programs there just waiting for you to use!

To start... Lately, I've been staggered by the number of people contacting me about the difficulties of using Public Domain material. Typical comments are that when they opened the disks' icon there was nothing there! The following will prove that there is.

Icons... Unless a particular program, file etc has a similarly named file with '.info' on the end of it there will be NO icon. A program called FRED would also need a file called FRED.info to have an icon appear on the Workbench. A lot of early Fish disks, for example, had few, if any, of these '.info' files. You see, any program can be run from the CLI (and therefore doesn't need an '.info' file) but not all programs can be run from an icon. (To be honest, ANY program can be made to run from an icon but more of this in subsequent articles). The only way to 'see' what is actually on any disk is to use the CLI or SHELL, preferably the latter as it's more versatile.

Shell... First then, load your Workbench disk (a copy I trust) and double-click on the SHELL icon. Make the window as big as you like then type: DIR. This command lives in the C directory of your Workbench disk and gives you a directory or listing of all directories and files in your current directory, shown in the Shell PROMPT. Try it again and type: DIR OPT A. This is the Option All and will show you EVERYTHING - contents of directories (drawers), sub-directories etc etc. There's a lot of stuff there ain't there? A lot of it you can

delete to make room for more useful programs that you'll come across. Try the CD command. Type: CD UTILITIES and the Utilities drawer is now your Current Directory - that's what CD means. Type: DIR again and you can see what's in that drawer. Type: CD / and you'll go back a level and end up in the ROOT directory where you started. Get the hang of using DIR and CD and you're halfway to using PD disks.

You'll find it a good idea to have a SHELL window there waiting when you boot up. That way you don't need to double click on the SHELL icon every time. To do this you must edit your Startup-Sequence. This is contained in the S directory on your disk. So, in the SHELL window, type: ED S/STARTUP-SEQUENCE and the next thing you'll see is the actual text of the Startup-Sequence. This is the file that the Amiga reads every time you boot with the Workbench disk and as you get the hang of the Amiga you'll edit this file a lot. (At the moment mine's like War and Peace!!!) Press the DOWN ARROW key (below the DEL & HELP keys) and the cursor will move down the screen. The last line says ENDCLI :NIL: and it's this command that ends the CLI that the Amiga boots into. Put the cursor at the start of the previous line which says LOADWB. (This command loads the Workbench so that all the icons appear). Press RETURN on the keyboard and move the cursor (UP ARROW KEY) to the start of the new blank line. Type: CD SYS: (otherwise the SHELL will appear with C as the current directory) then create another blank line by pressing RETURN, and type NEWSHELL NEWCON:0/20/550/120/ FRED'S-SHELL (or your own name if it isn't Fred!). Press the ESC key then the X key followed by the RETURN key. This new, altered Startup-Sequence is then saved over-writing the original. Reset the Amiga (the three finger job) and lo and behold, you've got a SHELL window on your Workbench.

What, no Workbench? In fact, why bother with the Workbench at all? Load straight into a SHELL window by ignoring the LOADWB altogether - you can always type it in the SHELL window if you want to load the Workbench later. (This also saves a fair bit of memory). Instead of deleting the line in the

Startup-Sequence just type a semi-colon (;) at the beginning of it. The line will then be treated as a comment and will be ignored. To re-install LOADWB just delete the semi-colon. You can also adjust the size of the SHELL window by altering the dimensions 0/20/550/120 (from the top left hand corner of the screen X start/Y start/X finish/Y finish). Alter the numbers until you get it where you prefer although you shouldn't exceed 640 across or 256 down.

Here's where the fun starts! If you've got a second drive then insert your Fish disk (or whatever PD disk you've got) into the second drive. Type: (in the SHELL window) DIR DF1: OPT A. You'll now get a complete listing of the disk.

What if you haven't got a second drive? Well, once you've loaded the Workbench disk, taken it out and inserted your Public Domain disk then typed DIR, you're going to be asked to re-insert the Workbench disk. Why? The reason is that the DIR command is in the C directory of the SYS: disk. The SYS: disk is the one which, unless you tell the Amiga to ASSIGN it somewhere else, is the disk that you booted the Amiga with in the first place. The remedy? You have a choice actually. You can copy either the commands that you'll need to the RAM: disk or make those commands RESIDENT. You can do either when you boot by (editing the Startup-Sequence) or you can do it now.

Resident... Put your Workbench disk back in and type: RESIDENT and those commands already Resident will be displayed. (Resident means that they are in memory and can be used over and over again.) A command, to be made Resident, has to be PURE meaning that it has been coded in a certain way. Such commands are DIR, CD etc. To see which are 'Pure' type: LIST C and all the programs in the C directory will be Listed showing their respective sizes in

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OKIMATE-20

The Amiga is capable of producing some of the most stunning graphics ever seen on a micro. However, unless you can transfer these images to a more permanent medium their use may be a little restricted. Alastair Statham takes a look at a budget COLOUR printer that will let you release your talents from the monitor.

A printer is regarded by most computer users as a natural add-on to be acquired as soon as possible. The Amiga's colour capability would seem to make a black and white printer less than suitable. But the price of recent colour printers in the obstacle. The Okimate seems to have solved that problem.

The Okimate-20 is a thermal transfer printer. It works by melting a wax-like ink onto the paper. The ink is carried on a thin plastic ribbon housed in a convenient easy-load cassette. Ribbons are available in either colour or plain black. The life of a colour ribbon is about thirty-five thousand characters. It is made up of a series of eight and a half inch long red, blue and yellow sections separated by a black marker. It takes more than two feet of ribbon to print each line in three passes. The instruction book says that each ribbon is long enough to print ten screen shots but in practice I have been getting at least fifteen colour pictures from each cartridge. Black ribbons have a life of around a hundred and twenty thousand characters which should be enough for over seventy-five average A4 pages of text. A ribbon saving feature stops the black ribbon from advancing when multiple spaces are printed. If you are prepared to use thermal paper you can use the Okimate 20 without a ribbon at all but using a ribbon produces a bright and glossy

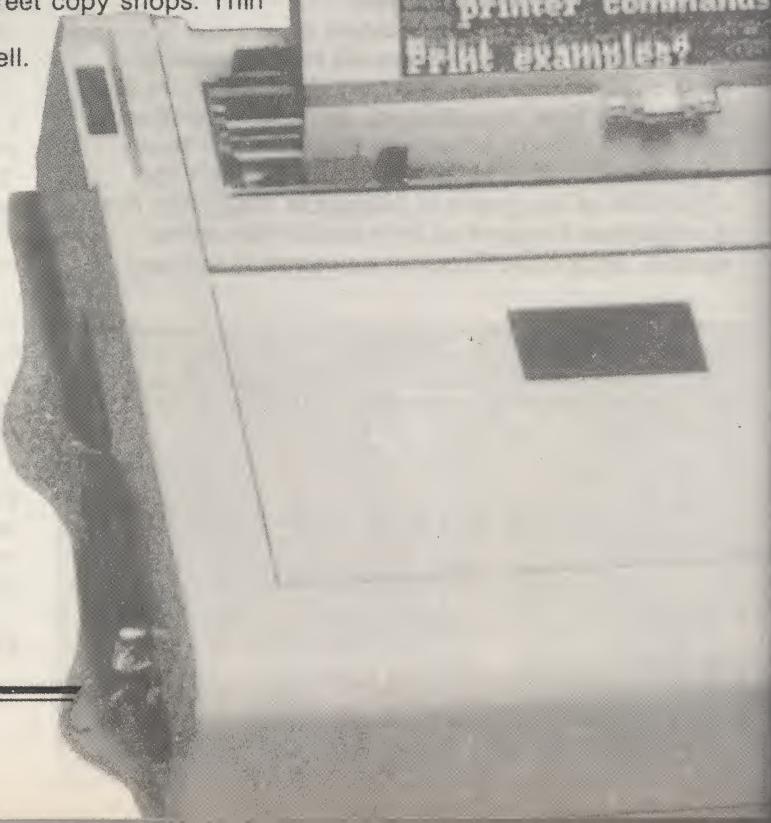
image that looks as though it came from a magazine.

Single sheet, continuous roll or tractor feed paper can be used. A release lever disengages the paper advancing mechanism to allow easy loading and manual paper advance is via a simple thumb-wheel. Paper can be between five and ten inches wide. There is a paper-out detector and a 'skip over perforation' feature for fanfold paper. Although most types of paper will work I have found that thin shiny paper gives the best results: The best type I have found so far is called 'Art Gloss' which is relatively cheap and available from most high street copy shops. Thin acetate sheet also works well.

The twenty-four pin print-head is easily removed for cleaning or replacement as it simply snaps into position. The dot size produced by each pin varies according to the print speed selected and the setting of a slide switch called the darkness control. Correspondence quality is produced using fourteen by fourteen dot characters at a speed of forty characters per second. By dropping the horizontal resolution to seven dots a draft quality speed of eighty characters per second is possible. Normal graphics are printed at sixty characters per second compared to

From black and white

Using B&W
These basic commands
control printing:
LLIST = List a
program
LPRINT = Print text
of B&W printer
commands
OPEN WITH PRINT#
Sends text or
printer commands
PRINT examples?



forty for full resolution twenty-four pin graphics. In this mode the resolution is 120 by 144 dots per inch.

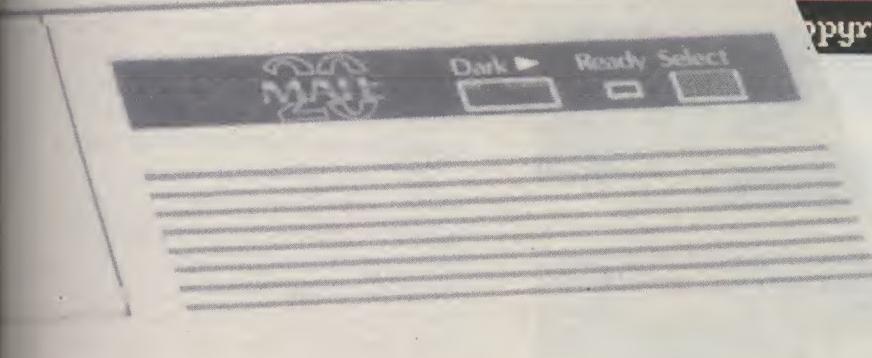
Three basic character pitches are provided as standard. Pica prints at ten characters per inch (CPI) allowing eighty characters per line (CPL). Elite allows twelve CPI and ninety-six CPL while fine print gives just over seventeen CPI and a fits a full one hundred and thirty-two characters on a single line. Each of these styles is also available in a double width mode. Italics and underlining may be used to highlight text. Bold text is printed in correspondence quality and is therefore printed no differently from the normal text in this mode. Superscript and subscript modes allow accurate printing of items such as chemical or mathema-

tical formulae. Although the sub and superscript characters are quite tiny they are always perfectly readable.

The Okimate-20 is a very neat little printer. It is less than two and a half inches high and has a footprint only just larger than a sheet of A4

paper. The controls are well laid out and easy to use. The printer is mains powered with no external transformer. A green rectangular LED on the top panel of the printer lights

and white... to COLOUR!



Using Basic Programs

These basic commands control printing:

LLIST = List a program

LPRINT = Print text or enter printer commands

OPEN with PRINT# = Sends text or printer commands

Print examples?

Y = Yes

N = No



OKIMATE 20 LEARN TO PRINT

WELCOME

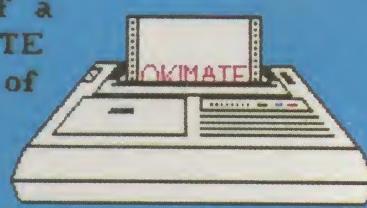
We hope you enjoy learning to print.
Please install a black ribbon. Set your

carriage to the top of a
Turn OKIMATE

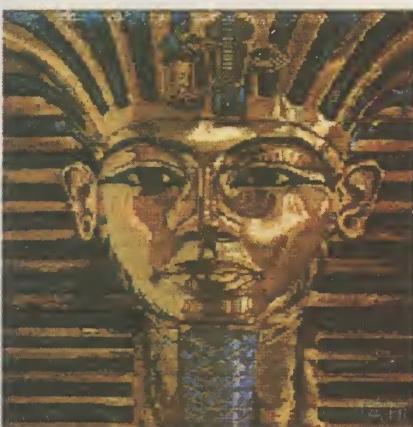
carriage to set "top of

print Demo?

N = No



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CONTINUED FROM PREVIOUS PAGE

when the power is on. This LED also doubles as a warning light by flashing when an out of paper or end of ribbon condition occurs or when pause mode is selected. An adjacent select button allows the user to pause and restart printing. The darkness control comprises a five position slider switch and is on the same control panel. The paper advance thumb-wheel and release lever are located on either side of the paper window which is hinged at the back of the printer. This transparent cover incorporates two small rollers and a partly serrated tearing edge for splitting continuous stationery. With this cover open both the print head and ribbon compartment are easily accessible. The ribbon cover hinges forward to reveal a mechanism reminiscent of a domestic cassette recorder.

As with many of today's printers the Okimate's interface is provided by a plug-in personality card. The

duces are nearly glossy graphics are superb a ter to shame. It is such does not represent monochrome text printer. D emed form-feed problem value for money.

Example of Okimate text

Amiga model has an 8K printer buffer and comes with a Centronics interface. The card used to provide this interface on my model was in fact designed for use with an IBM PC but has had the driver ROM replaced by an AMIGA version. The manual supplied was really intended for use with the IBM PC but this did not detract from its usefulness. The manual is about A5 size with over ninety pages. The instructions are clear and easy to follow with a number of helpful diagrams. The topics covered include the controls, specifications, special control characters and information about advanced programming for graphics and

custom character sets. A full description of the cable requirements is given together with details of a group of switches on the personality card. These switches control such settings as the default print quality, form length, line feed and character pitch. My version also came with an additional A4 sheet of instructions describing the Amiga parallel port pin-out and other details specific to the Amiga.

"A one or two dot overlap is not nearly as noticeable and prevents any white gaps being left."

The main difference between the IBM and AMIGA versions of the ROM is in the control code commands and line-feed movement. With the Amiga version DIP switch five on the interface card sets the line-feed to either 23/144 or 24/144 of an inch. This control enables the user to minimize any gaps left between the lines when printing graphics. The only weak point of this printer seems to be the accuracy of its form-feed. It is probably no worse than most other printers in its price range but with large blocks of glossy colour a thin white space left between lines is more noticeable. The solution is to arrange the line-feed so that the lines slightly overlap. A one or two dot overlap is not nearly as noticeable and prevents any white gaps being left. In the Okimate-20 driver supplied with Workbench 1.2 the graphics form-feed is controlled by two instances of the control command "1B3324". I used the public domain Filezap utility to change each of these commands to read "1B3322" and thus reduced the line-feed to 34/216 of an inch compared to the original 36/216. This has completely cured the problem.

I am extremely pleased with my Okimate-20. The colour pictures it produces are almost glossy magazine quality. Even in monochrome its graphics are superb and the quality of the text puts my typewriter to shame. It is primarily a colour graphics printer and as such does not represent as good value if all you need is a monochrome text printer. Despite the price of ribbons and the easily remedied form-feed problem, I believe this printer represents remarkable value for money.

HOW OKIMATE 20" PRINTS COLORS



OKIMATE COLOR FORMAT (LPRINT):
ALIGN RIBBON (27)+(25), YELLOW DATA + RETURN/NO LINE FEED (141),
MAGENTA DATA + RETURN/NO LINE FEED (141), CYAN DATA + RETURN (13)
EXAMPLE:
10 LPRINT CHR\$(27)+CHR\$(25); "GREEN";CHR\$(141);CHR\$(141); "GREEN";CHR\$(13)

COLOR SELECTION GUIDE



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to Colour!

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How Okimate Mixes Color

OKIMATE uses a 3-color ribbon. It can create more than 160 shades by mixing colors like a painter.



Let OKIMATE show you how.

Print Color Demo?

Y = Yes

N = No

(Use color ribbon)



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bytes, creation dates and protection flags - h,s,p,a,r,w,e & d. If you'd like to know what they mean then here goes: H - Hidden: S - Script: P - Pure: A - Archived: R - Readable: W - Writeable: E - Editable: D - Deletable. (More of this in later articles). You can see which have the P flag and therefore which can be made Resident. The ones already Resident were made so by the StartupII file in the S directory. This file was executed halfway through the Startup-Sequence and can be edited in a similar fashion - try it and add some more commands to that list. For starters you could try RUN & COPY. You may add to the 'Resident' list as you progress - as you go or by editing the StartupII file.

With these commands Resident you'll be able to use any of them when you insert your Fish disk into df0: without the "Please insert volume..." requester appearing. How? The Amiga will check for the memory-resident commands before looking for them anywhere else. Handy eh?

Or RAM:... The other way is to copy what commands you feel are necessary (the five above for instance) to a logical C directory on the RAM: disk. You then ASSIGN the C directory there, also alleviating the problem of "Please insert volume...". Again, you can include the following in your Startup-Sequence or type it in now. Type: MAKEDIR RAM:C (Return) Type: COPY C:COPY

CD
RUN
LIST

DIR TO RAM:C (Return) Type: ASSIGN C:RAM:C (Return)

You now have five commands in the C: directory which you have ASSIGNED to RAM:. Either way works although making the commands Resident is much the more preferable.

Using the RESIDENT is favourite as commands can be added or removed ("RESIDENT <Name> REMOVE") as you go along. Copying commands to a logically assigned C directory on the RAM: disk (as that method is called) is cumbersome and, I think, long-winded. The RESIDENT method will also, in the final analysis, use LESS memory!

Back to the Fish... Right, now you can bung your Fish disk back in and type: DIR DF0:. (You've changed the disk so just typing DIR would bring up the "Please insert volume..." requester - the Amiga still has Workbench as its current directory.) This time magic - no requester! Try DIR DF0: OPT A (or CD DF0: then DIR OPT A) and see everything. Make the disk you're looking at the current directory by typing CD <diskname> (or drive number - df0:). Now you can make any of the directories the current directory in the same way. Say you've made a directory called Tom the current directory on a disk called Harry. There may well be other sub-directories

within Tom called Bill, Jim & Julian. Again you can make any of these the current directory in the same way. Type: CD Julian (Return) then DIR. This time you may well see no more sub-directories (no more names with (DIR) after them) and all you see are a load of names. Let's say that after the last DIR you typed the following appears on the screen: ReadMe, Poster, Bill, Bill.man, Bill.c, 9!!!?gC<c>. "What's all this rubbish? I only got the disk for a program called Bill" you say. Bill is there alright. The other files are something like: Poster - A short piece of text by the author. Bill - The actual program itself. Bill.c - The source code (in this case in 'C' language. Bill.h - A header file used in compiling the program (from its source code). Makefile - Also used in compiling. Bill.man - The manual telling you how to use the program. A lot of programs in the Public Domain have the source code included so that users who wish to may alter it in some way then recompile it. Also, some of the code useful to other programmers and can be extracted and linked to it. However, to the novice, all that is of interest is the program itself. Often you will see other extensions to program names. A program name with the suffix .asm will be the source code is assembler, .o an object file, .bas Basic etc etc. Don't worry about it!

I always feel it's prudent to read the ReadMe files and Manuals (if supplied) before attempting to try out the programs. But HOW I hear you say? Workbench 1.3 comes with such a text reader (not an editor such as ED) and it's called MORE. This is a PURE program and can therefore also be made RESIDENT. Try it! The entry in StartupII can go right at the top and should read RESIDENT SYS:UTILITIES/MORE. Then, when you see a document you wish to read, type: MORE <document name> and off you go. There are lots of text readers on Public Domain - my favourite is MuchMore to be found on the later Fish disks. (Bet you thought you'd need to buy a word processor to be able to read text files!)

Other things you'll find on PD are pictures and sound files. Again, you don't need paint or sound packages to see or hear such stuff. A graphics viewer or sound player can also be utilised in the same way as a text reader. Usually such programs are included on the disk. Again there are many such utilities available in the Public Domain. Some examples are SHOW, SUPERVIEW, SHOWPAL etc for pictures and HEAR, PLAY etc for sound files.

When you've actually read all the guff and feel ready to try the program out then, if the directory containing the program is still your current directory, type: Bill (for example) or preferably type RUN Bill. By typing RUN, the SHELL (where the command was

typed) can still be used whilst the program is running. Without the RUN you will have to wait until the program has finished before you can resume using the SHELL window again. As a matter of habit I always use the RUN command.

Mind you, there are lots of utilities available both commercial and Public Domain to make the job of actually seeing what's on a disk easier. A few that come to mind are DirUtil, DirMaster, CliMate, DiskMaster etc. The latter is probably the best I've seen and includes a text-reader and a picture viewer all in the one program. It's also configurable in that you can set its colours, devices, screen resolution etc to suit yourself. Every time that you then run DiskMaster it reads the 'config' file (stored in the S: directory) and it appears the same as when you last used it. After clearing out the dross from your Workbench disk this would be a much more useful utility to copy onto it. DiskMaster also has the ability to ARC and ZOO (UnARC and UnZOO) files too. You're scratching your head again aren't you?

Archiving... Initially a lot of programs are not distributed on disk but over the 'phone lines using 'COMMS' - Communications. As using the telephone is not one of the cheapest methods of communication such programs are 'archived' before transmission. This means that all the bits of source code, executable programs, manuals, readme files, posters etc are lumped into one compressed file which, as it's now smaller than all the original component parts, can be sent in one go, more quickly and therefore more cheaply. You'll occasionally come across such files on PD disks as this is the only way that it will all fit on! To get at the stuff you want will require you to 'un-archive' them first. The favourite programs used are ARC and ZOO - both in the Public Domain. It's fascinating to use them to see just HOW MUCH can come out of one archived file. You'll usually see the suffix .ARC or .ZOO on such files that need the treatment. Just follow the instructions in the Readme files supplied and off you go!

I think we've managed to cover quite a bit of ground so far. You've used several DOS commands and in future will be using a lot more.

However, should any of you come across a real pig of a program on a Public Domain disk that you're finding impossible to run then let me have a copy and I'll have a bash at it for you.

As a footnote may I recommend that any of you contemplating buying either a second drive or expansion memory settle, in the first instance, for the extra memory. You can see from the RESIDENT command that extra memory is MUCH more useful than a second drive. Let the other disk drive come later!

P.W.

AREXX

(The integrative language)

A language adopted by IBM comes to the Amiga – and has started to change many other applications. Howard Oakley finds out why and looks at a command shell with an ARexx interface.

ARexx is the Amiga implementation of the language REXX, devised in the early 1980s by Mike Cowlishaw of the IBM Research Centre at Winchester, England. REXX could easily have disappeared into obscurity but, because it has proved to be a very powerful tool for processing script or batch files (like the startup-sequence file in the S directory on all Workbench disks), IBM have adopted it for mainframes and their new OS/2 operating system.

ARexx is a faithful port of the language to the Amiga, carried out by William S Hawes, the author of the popular public domain utility ConMan. It is a small program, largely implemented in a 32k library, with some very unusual features. It is interpreted and reads not unlike BASIC, although it is generally much simpler. It has particularly powerful facilities for processing text strings and dealing with other programs.

ARexx is supplied on a single unprotected disk, with a printed, spiral-bound A5 manual which in 155 pages manages to be an excellent introduction to the language as well as a clear reference for this implementation. The disk has a simple script file which enables you to install the vital files on other floppies or a hard disk, a feature which many more expensive packages omit. ARexx runs on any Amiga with version 1.2 or later of Kickstart and Workbench.

Version 1.06 comes with many examples and a manual update on the disk, header and include files to help programmers in assembler, C and Modula 2 write programs to use ARexx and five additional support libraries. These provide maths functions (total 32, which can also use a maths co-processor if installed) and some fancy ones to go with ARP, the PD AmigaDOS replacement which is also supplied on the disk. The ARP library is particularly good, in that it even offers the MicroSmiths file requestor as a simple

function call, enabling much more professional programming without tears.

This implementation is very good and true to the original language. A total of 32 instruction are provided (elements like WHEN), 88 functions (such as DATE()), which returns the date in a variety of formats), 55 function calls in the standard support library and additional ones in the other libraries. Because ARexx itself is concentrated into a library, it is very efficient in its use of memory – only one copy of most of the code has to be resident, no matter how many programs are using it. Bill Hawes has encouraged extension functions to be as careful, by ensuring that they too are placed in libraries, which, although they are more difficult to write, are a lot better in use.

One example of how ARexx can make life easier for you is in writing a new version of the AmigaDOS command, Join. The original has a major problem with it, in that you cannot join a series of files into one with the same name as one of the components. Thus:
join mainfile file1 file2 AS mainfile
 cannot be used, instead:
join mainfile file1 file2 AS tempfile
copy tempfile TO mainfile
 will do the trick. This sequence is carried out by the following ARexx program, which can be called JOIN.REXX and run in place of the AmigaDOS command Join:

```
/* join - a front end to fix the problem
with AmigaDOS join */
parse arg x /* takes in the argument
list supplied */
temp = 'arexxtempfile' /* the
temporary file name */
do i=1 to (words(x)-1) /* a FOR ...
NEXT ... loop to work */
/* through the argument list */
if words(x,i) = word(x,words(x)) then
do
/* word(x,i) returns the ith word in
the */
```

```
/* argument list; words(x) returns the
*/
/* number of words in the parameter
list */
/* Thus, if the destination file name */
/* is the same as any component for
the */
/* join, */
oops = word(x,words(x))
/* first make OOPS that file name */
x = delword(x,words(x)) 11 temp
/* then replace the offending file
name */
/* with the temporary one, as the */
/* destination */
'c:join' x /* carry out the join using
AmigaDOS */
'copy ' temp 'oops'
/* copy the temporary destination file
*/
/* to the real destination file name */
/* delete' temp /* then delte the
temporary file */
exit /* and exit this ARexx programm
*/
end /* end of IF ... THEN DO ... */
end /* end of DO ... TO ... */
'c:join' x /* carry out an ordinary join,
as no */
/* name is duplicated */


```

The other implementation of REXX which you are likely to come across is that of the PC, which is over double the price. ARexx is quite compatible with this but Personal REXX for the PC is not as true to the mainframe versions, so you do have to be a bit careful when porting programs between machines. On the other hand, it is now very easy to write programs for mainframes on the Amiga – and good REXX programmers are sought after, so it may help you in the jobs market too!

I have been very impressed by ARexx, in all respects from documentation to the implementation itself. However, you do have to be fairly happy working with the CLI – if you have always stuck to using

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Workbench, you might find it hard going. Neither can it replace BASIC, C or assembler as the Amiga's major programming languages: you can write many programs in REXX but it is best for manipulating other programs. It has, for example, no graphics abilities in itself but can deal with the graphics produced by another program. In order to do this, ARexx provides a set of 'hooks' which

allow other programs to communicate with it and vice versa. It is thus ideal for producing customised integrated suites of programs, much in the way that macros or command languages do in other programs like DBase II and text editors.

So, if you have used the CLI, you should get ARexx, especially if you are interested in producing really profes-

al integrations of a number of separate applications and clever script files without tears.

H.O.

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COGNIZERS

by R. COLIN JOHNSON & CHAPPELL BROWN
(John Wiley & Sons £14.95/\$22.95)

Daphne Moss finds a book that describes the progress toward "Synthetic Minds"

The thought processes of the human brain are complex, and at present impossible to duplicate. Computers are becoming ever more and more sophisticated but even the fifth generation cannot match, as yet, the rapidity of the neural network contained inside our skulls.

What we call 'thought' is the end product of electrical impulses passing a chemical message from one set of nerve cells to another. The brain distributes its processing tasks among billions of those nerve cells called neurons, which constantly send and receive information.

Until fairly recently the only machines able to mimic the brain's amazing ability, and then only in a partially successful way, were computers, digital machines. Although even they were not capable of the all-round evaluation of complete thought. They were restricted by their own programs.

Now we are into the age of cognizers and in R. Colin Johnson and Chappell Brown's book, the authors take us into the world, which almost upon us, of the thinking machine.

What are cognizers? They are, we are told, truly machines that think. They have the ability to recognise objects and understand speech. They do not just follow a set of rules, laid down by a programmer, to achieve a logical answer to a problem, nor do they come up with 'does not compute' or 'error' if it is outside the scope of their knowledge.

Cognizers can actually learn to recognise objects and understand speech and, if necessary, change their way of

thinking to reach an instinctive rather than a mechanical solution. They are, in fact, "synthetic minds".

The difference between a computer and a cognizer is that the former separate the functions of remembering and computing while the latter combine memory and processing which, as Johnson and Chappell point out, will thus enable them to transcend the bottleneck between the memory and the CPU (Central Processing Unit) that is choking traditional computers.

Johnson and Brown's book not only gives information on cognizers but also goes into the history, the hard science and the research behind the machines.

They believe that modern computer architectures have now reached the physical speed limits to technology. The time delay of electric signals moving in the wires between chips and circuit boards now make it necessary to pack the microchips more densely and the heat that is generated threatens to melt down the whole processor. Cooling systems to prevent meltdown can be, and are, installed in supercomputers but the cost is a major portion in the resulting high price of the machines.

Cognizers, although using microchips, will need no software, they will learn rather than be programmed. They will be composed of neural networks that are, as near as can be, modelled on the brain.

There is already, at Johns Hopkins University, in the USA, a scientist, Terrence Sejnowski, working on a neural network simulator that can translate word processor text into understand-

able English speech. He teaches his system to read the text, not by programming but by allowing it to learn for itself. After just sixteen hours of training his model, called NETalk, could read the 100-word example text with 98 per cent accuracy. Its voice sounds 'almost babylike' but the rhythms of human speech are there.

First generation cognizers are already coming on to the market. There are now plug-in modules or specialized computer software for PC's that add cognizing simulation abilities. The only thing restraining progress is the fact that many companies lack experts in the cognizer field. They have to have research engineers who are familiar with the neural networks of the brain. And there are not too many of those around at present.

As the authors suggest perhaps the best cognizer system will, eventually, be a neurocomputer. A hybrid in which the computer checks the cognizer for logical mistakes and a cognizer keeps the computer from irrelevant tangents.

If you want an easy-to-read-and-understand book on the subject this is not it. My own (human) neural network had a hard task taking in many of the paragraphs at first reading, but the fascination of the unfolding story kept me ploughing on. It was well worth the effort.

We live in an age of modern miracles the true cognizer could be the next one we see.

D.M.

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What lies behind the secret of Anil Gupta and Dino Dini? Is it black magic or programming genius that has made cynical, streetwise Tony Horgan drool and kneel to the East (Dartford, Kent, is where it all happens for Anco) and proclaim "The best computer game ever"? Read on, for according to Horgan, history is being made.

A year after its release, Anco's Kick Off (Thank you, Anil Gupta, hero of all Amiga soccer fans) was still the world's favourite computer game. Despite numerous challenges from rival footie games, no-one had come close to matching its absolutely superb playability. The release of Kick Off 2 changes all that. Unbelievably, the sequel is even better than the original!

What you get is Kick Off with extra bits. Fortunately these extra bits amount to a lot more than a new title screen and the option to select your players'



Kick Off 2

Anco

hairstyles. Along with all the new features, you also get much more control over the basic parameters. This allows you to determine the strength of the wind, choose the ref, alter the speed of the game and make various other adjustments.

"On absolutely no account should Kick Off 2 be passed up by any Amiga gamer."

When it comes to the new features, "aftertouch" is one of the most exciting. Once you've kicked the ball, moving the joystick to one side swerves the ball in that direction. The swerve is only very slight, but is very handy. Banana shots are the obvious use for the aftertouch, but you can also use it to great effect when passing, bending the ball around opposing players. It's hard to tell exactly why, but the ball seems to move even more realistically than before. Maybe it's just down to the addition of spots on the ball.

Another excellent addition is the action replay feature, which lets you relive those magic moments, even in slow motion if you like! What's more, the replays can be saved to disk, and built up into a library of all-time great goals! Now there's something to show your grandchildren!

"It's hard to tell why exactly but the ball seems to move even more realistically than before."

As in the real game, some of the best goals will come from free-kicks. A free-kick on the edge of the box now cues a far more realistic set piece. The defending players make a wall, doing their best to block off a direct shot. The attacking team now have a number of options open. Either of the two supporting players can be used for a short kick, or you could blast the ball either through or around the wall. You can even have a player run over the ball to fool the defence. Once you've kicked the ball, you can then swerve or dip the ball, with any luck into the back of

KICK OFF 2

The goalies are still controlled by the computer for most of the game, but you can now control the kickouts, which can help claw back vital seconds at the end of a game. Corners and throw-ins are also now under to a greater extent under your control, and there's even a new animation frame for the thrower!

Games ending in a draw will go to extra time, followed by a sudden-death penalty shoot out; far better than having to resort to penalty practice to resolve an even scoreline.

"It brings out more frustration, satisfaction, emotion and competitive rivalry than any game in history!"

Of course, there's a World Cup tournament included, in which you can play any of this year's qualifying teams. If all you want is a change of kit, then that's no problem. You can play in virtually any colour, with stripes, hoops, flashes or plain shirts. In fact, you would be extremely hard pushed to find a strip that the game doesn't include. You can even play in Arsenal's kit if you fancy a laugh. (Careful, Horgan, you are treading on sacred ground! Ed)

Fouled, or simply exhausted, players can be taken off and replaced by fresh, highly enthusiastic substitutes. If you've built up a crack squad in Anco's Player Manager, you can load them in, and play with them in Kick Off 2. Friends can team up, with up to four playing at once, but you'll need a four-player joystick adaptor to get the full benefit.

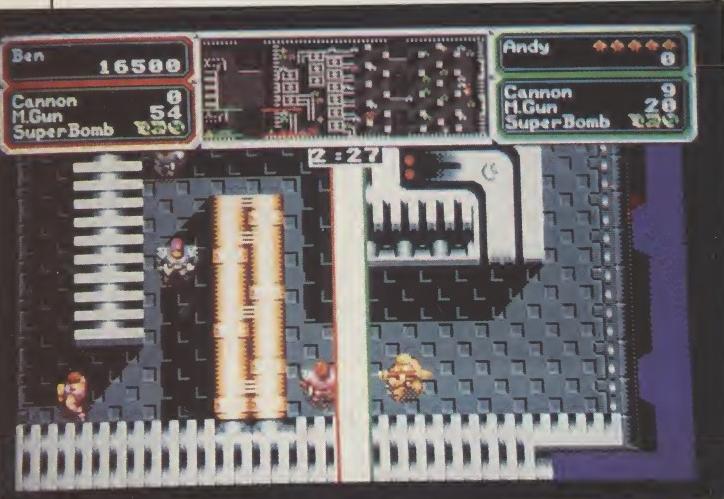
Kick Off was awesome in its original form. The sequel is absolutely stunning. It bites from the first touch of the ball, and shows no mercy. It brings out more frustration, satisfaction, emotion and competitive rivalry than any game in history! While the



game is at its best with at least two people, even solo games can induce some rather embarrassing spontaneous hoots of protest and cries of joy! The free kicks, aftertouch, substitutions and action replays all help make for a far more realistic and spectacular game than is offered by any of its rivals. None of the alterations in any way detract from the original's appeal, mainly because just about all of them are optional. If you don't like a certain aspect, which is unlikely, you can just switch it off. Expert designer and programmer Dino Dini has done it brilliantly again. On absolutely no account should Kick Off 2 be passed up by any Amiga gamer; it gets my vote for best computer game ever.

T.H.

Graphics: 88% Sound: 75% Playability: 98%
ABSOLUTE VALUE: 97% Price: £19.95



Crack down

US Gold

Not Sega's most spectacular coin-op by a long shot, all the same Crackdown is a pleasant alternative to the Outrun and Operation Wolf clones currently filling the arcades. Arc Developments, programmers of Forgotten Worlds, were given the job of the Amiga conversion and have carried out their task very professionally.

There's nothing startlingly new in the design of the game. It's a shoot 'em up set over sixteen levels of maze-like scenery, in much the same style as Gauntlet. The split screen allows a simultaneous two-player game, without the restrictions of Gauntlet's single screen. Whether alone or with a partner, the mission brief is to plant three time bombs on each level and escape before they blow.

The power of three bombs is needed to make sure you completely destroy each level. The prime spots for the bombs have been marked with a cross. Walking over one automatically puts the bomb in place. Getting to the crosses is, of course, not just a matter of wandering around a maze for a while. Patrolling the corridors are a team of android guards with orders to kill any intruders. If you're careful you can avoid many of them, but if one spots you, you'll have to give him a taste of photon laser death. If you find yourself out of ammo, you'll have to resort to your hands and feet for protection. Once you've dropped all three bombs, it's off to the next level.

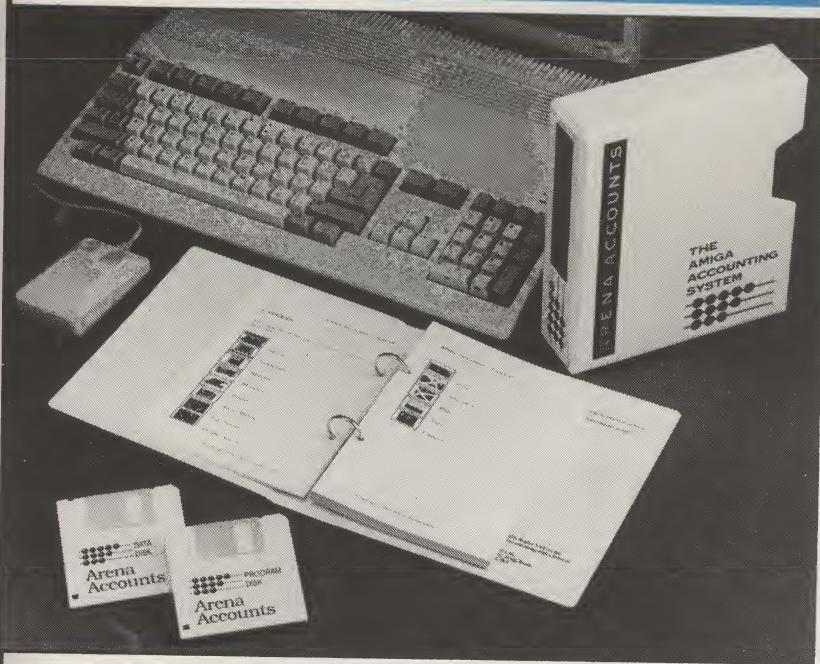
Arc have done an excellent job in converting the coin-op's graphics. All the sprites and backgrounds are near enough identical to the originals. Sadly they're not backed up by smooth scrolling, the lack of which makes it hard on the eyes before long. The scanner at the top of the screen is a good idea, to give you essential warning of what's waiting around the corner, but it's extremely difficult to make any sense of the numerous blips and dots. On a TV it's completely useless. The lack of a full-screen single player mode is a shame, as it's irritating to be limited to a tiny scrolling window, with an equally sized vacant window sitting opposite.

The game's lowest point is its sound. The music is neither atmospheric nor funky, and effects are nothing more than barely audible pops. However, in general the conversion is an accurate one. The main failings are inherited from the coin-op. There's little innovation, and even less variety. I've fed a few coins into the arcade machine in the past, and as an occasional distraction, the coin-op does well. As a long-lasting home computer game it misses the mark.

T.H.

Graphics: 70%	Sound: 49%	Playability: 55%
ABSOLUTE VALUE: 54%		Price: £24.99

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- Visit a tavern
- Trade with a merchant
- Divide up the plunder
- Check information
- Leave town

If you fancy a "serious" game, but are bored of space trading and flight sims, how about having a go at captaining a pirate ship in the seventeenth century? There's a fortune in gold and silver to be made, but you'll have to be prepared to fight for it. The blood-stained deck of a war galleon was no place for wimps.

"Success will boost your reputation, both in piratical and aristocratic circles."

Your quest for notoriety and riches has humble beginnings. You may meet up with your character working on a plantation, which could be just about anywhere in the Caribbean. Get talking to a couple of passing sailors, and if you can impress them with your knowledge of the Spanish "Silver Train", they'll



take you on as captain of their ship. From this base of a small crew and just enough food to get you by for a while, you set about building your own little empire.

Once you've left the port, you'll need the help of the map supplied with the game. If you opted to play in the late sixteenth century, you'll find the many islands relatively unpopulated. Even so, there's plenty of wealth about. The quickest way to get your first share of it, is to cruise around a few Spanish ports and attack the first ship you see. The sizes of ships range from modest pinnaces to enormous galleons. Taking a galleon with your initially small crew can be tricky, but the outcome of any battle is always in your hands. If you think your victim could do with a bit of softening up, you could engage in a battle of broadsides. Skillful use of your cannons can bring an early end to the battle, forcing the opposition to "hoist their colours". The more resilient targets will stand firm and fight man-to-man on deck. A strong performance from the captain heavily influences that of his crew, so if you lose your duel against the enemy captain, you lose the battle. Because of this, it's best to select swordplay as your specialist skill, which on the easier levels almost guarantees you a steady income.

"It's got so many tweakable details that you could keep playing different games for months."

Ambushing ships is your bread and butter, but there are some alternative ways of stocking up your coffers. All the towns are commanded by governors, who each enforce their own versions of their nation's laws. Every strapping young pirate captain wants to get himself a wife someday, and most of these governors just happen to have attractive daughters looking for a husband. If your romantic words fall on deaf ears, you may still find a use for the governor. With a good reputation, you could be recommended to him to carry out a mission, usually to round up one of his enemies. Success will boost your reputation, both in piratical and aristocratic circles.

You sail to a friendly port nearby. A family friend introduces you to the governor. He provides a "Letter of Marque" authorizing attacks on enemy ships. Now you are ready to seek your fame and fortune on the Spanish Main!



English Captain vs. Glintblade

Captain	Glintblade
Force:	14 men
Morale:	Panic
Weapon:	Longsword
	Rapier

If you're feeling particularly adventurous, and have a suitably large crew, you could make an assault on a town. You can do this in one of two ways. The first is to sail up to the fort, and let rip with a barrage of cannon fire, before landing and scaling the walls. Spanish war galleons aren't exactly nippy in tight spots, so avoiding the blasts from the fort can be very awkward. The second option is to anchor at a nearby cove, and march into the town. This brings on a pike and shot land battle, which can severely deplete your troops, or even wipe you out completely.

To add a bit of variety, you can opt to recreate a famous historical expedition, such as Sir Francis Drake's Silver Train ambush. In fact, if you really got into the game in a big way, it's got so many tweakable details that you could keep playing different games for months.

Although the game isn't visually stunning, the menus and status reports are very neatly broken up with small illustrations, depicting heavenly sunsets and settlements surrounded by lush jungle; not a bad advert for the Caribbean tourist board in fact. This all helps to make up for the rather dated looking battle scenes. A lot more could have been made of the sound effects; background sounds of your crew members doing battle, and an audible "Sail Ho!" from the lookout would have helped the atmosphere.

Unlike a lot of "deep" games, Pirates doesn't insist you digest a verbose 200 page manual before you play. There's a quickstart guide to get you up and running, and once you know the basics, you can figure out all the intricacies at your leisure.

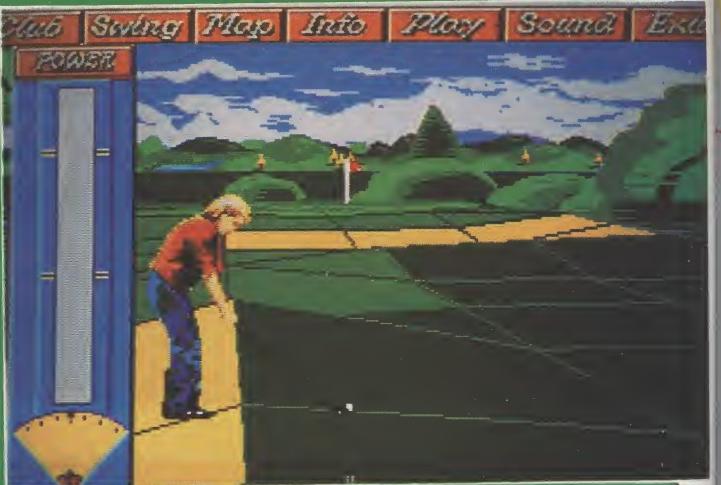
The only thing holding back the game, is the lack of big goals and long term motivation. Other than improving on your last game's score, there's no particularly enticing carrot to keep you playing after the first week or two. Something akin to becoming King of England in Defender of the Crown would have been welcomed. If a pirate's life ambition was to get rich quick and retire to grow fruit and veg on his allotment, then I suppose conquering the Spanish Main would be a little unrealistic. All the same, it's good to see a big game that's not too clever to be fun. Well worth a try.

T.H.

Another contender rises to Leaderboard's challenge. Playing safe, Gremlin have used the standard computer golf format as the core of the game, and on top of that added a load of fancy frills; but are they the icing on the cake, or merely a lamb outfit concealing old mutton?

"Strangely you always seem to be putting directly uphill, no matter from which direction you approached the hole."

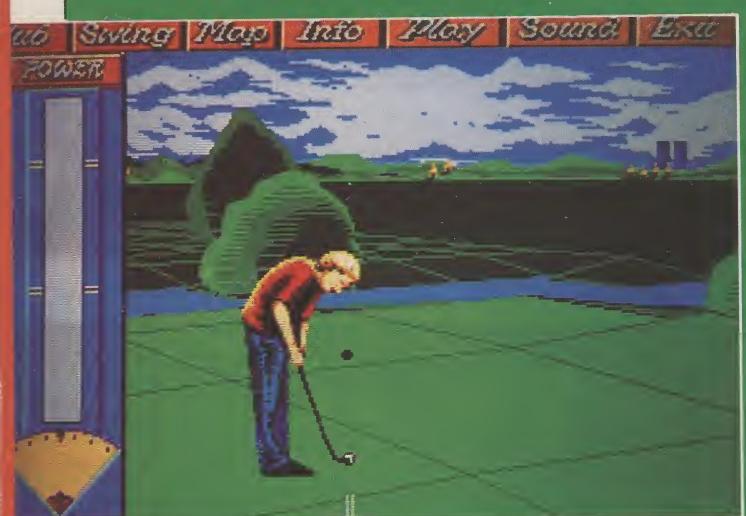
If you like your games tweakable, you'll welcome the options screen. From here, you can select the number of players, the type of game (practice, matchplay, strokeplay or singles), and switch in or out the wind, weather, ball effects and caddy. The ornate font looks nice, but unfortunately is often rather too elaborate to be legible on a TV, a mistake made by an increasing number of software developers.



Taking into account the distance, wind speed and direction, ground conditions and weather, you can now play the shot. In familiar style, holding the firebutton determines the strength of the shot, whilst a following tap of the button decides the accuracy of

Ultimate Golf

Gremlin



Once into the game, the most obvious difference between this and previous golf sims is the contoured land. The small undulations in the fairway are highlighted by a grid, which is laid over the entire course. It does the job, but a shaded light-sourced display could have done the same, without the loss of realism. The screen is drawn up with you ready to tee-off aiming directly at the flag. If you want to re-aim your shot, or get a better idea of the current hole's layout, you can select the map option. From here you can also zoom in on specific areas, or call up a 3D view from any chosen spot.

your aim. Trees, bushes, bunkers and lakes all have to be avoided on the way to the green. Putting is disappointingly simple.

Aiming is automatic, so you just have to get the power right. Strangely, you always seem to be putting directly uphill, no matter which direction from which you approached the hole.

The programmers have put a lot into trying to make this the best golf game around. Including details such as the degree of backspin put on the ball, the swingometer and variable weather conditions, it's not short on simulated realism. This also means that it's a more cluttered game than it need be, with a long-winded user interface. The disk is copy-protected, but there's also a further protection check worked into the manual. Before the game, you're shown a map of one of the holes, and asked to pick it out from those in the manual. The maps in the manual aren't exactly as they appear on-screen, and with one hole looking very much like another, this is an unnecessary irritation.

If in your eyes, realism means plenty of technical detail, you'll find Ultimate Golf extremely attractive. If like me, a more convincing environment and an easily accessible format come tops, you'd be better off sticking with Leaderboard.

T.H.

Graphics: 66%	Sound: 15%	Playability: 75%
ABSOLUTE VALUE: 72%		Price: £24.95

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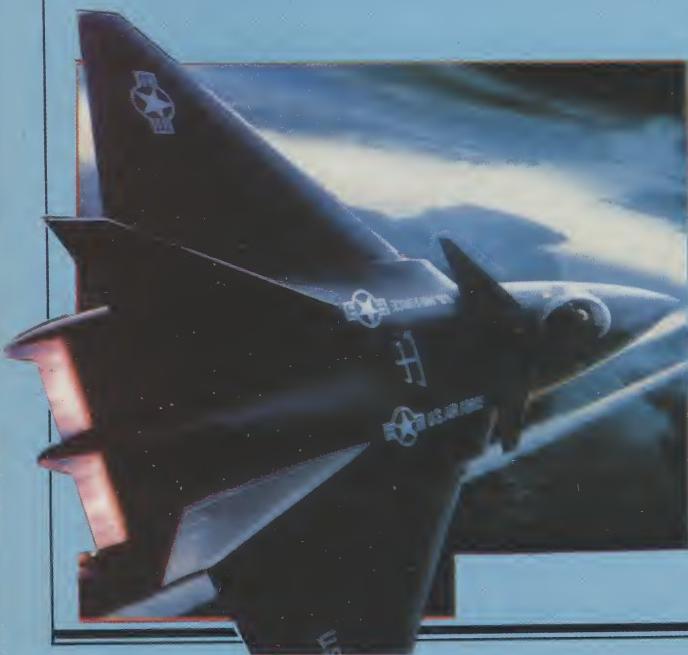
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Retaliator

Ocean

Purported to have been "reviewed" months ago in some of the computer press, Ocean's F-29 Retaliator has at last been released. Rather than take a brief look at a bugged and incomplete version which it seems some publications are very happy to do, we at AUI have held on to review the finished version, the one you'll find on the shelves and may choose to buy.



The Falcon mission disk introduced the idea of an on-going battle scenario, within which all the missions were flown. Retaliator does the same, only this time you get four completely independent scenarios. You also have the choice of two aircraft: the Grumman F-29 or the more attractive Lockheed F-22...Coming from the programmers of Falcon, boasting over ninety missions, with some of the fastest 3D vector graphics ever seen, F-29 Retaliator is definitely not just another flight sim.

After logging on, first on the agenda is selecting which scenario you fancy. To get you into the swing of things, the first scenario is set over a test range in Arizona, although even here you have to watch your back. The ten missions test most of the skills you'll need in the real battles, and have you destroying trucks, bridges, factories, SAM launchers and hostile aircraft. You can switch from one scenario to another at any time in the game, but the missions available depend on how many you've previously completed. To a slight extent, the remaining scenarios are different arrangements of mountains, airbases and cities, but even so, each has its own unique features. The Pacific islands are the exception, which conjure up a completely different atmosphere.

"Unlike its rivals, Retaliator's dogfights aren't fought against a dot on the horizon; you can almost see the whites of these pilots' eyes!"

While, in certain aspects, a few basic laws of physics (such as gravity) are ignored, Retaliator's "flyability" is among the best on the market. To take off and fly around is easy enough, and despite its enormous size, the aircraft is very manoeuvrable.



Aerobatics over the airfield are not recommended though, as the collision detection can often be infuriatingly inaccurate. Buildings and mountains seem to be surrounded by an invisible bubble, which when pierced, counts as a collision. Learn to give everything a wide berth and the problem becomes more tolerable. Compared to Interceptor for example, barrel rolls, inverted flight and the like aren't so easy to pull off, but less-adventurous flight is suitably simple.



When it comes to weapons and defence systems, you're very well equipped. The cockpit houses three monitors, each of which can be switched to one of three displays, giving you nine status, radar and navigation tools. Your targets are split into surface and air-based varieties, and to deal with them you're given a range of nine missiles and a cannon.

Dogfights are just one of the areas in which Retaliator excels. Over featureless terrain or an expanse of sea, the game speeds up considerably. In these situations, the dogfights are a real test of reactions and tactics, smooth and fast enough to be by far the most convincing of any existing flight sim. Unlike its rivals, Retaliator's dogfights aren't fought against a dot on the horizon; you can almost see the whites of these pilots' eyes! On the down side, it's common for the enemy jets to fly straight into you, which can bring a mission to a disappointing end.

"It's one of those games that seems to take you through a time warp. Boot up for a quick couple of missions in the morning, and before you know it you've missed two meals and it's time to turn in for the night!"

Retaliator's speed is a very strong point in its favour. Because it's so fast, cities, factories and any other objects can be more detailed than usual, without slowing the game to an unplayable rate. Your aircraft for example, both the F-29 and F-22, are made up of a good few more polygons than you'd normally find, and look far more dynamic for it. Switching to an exterior view and rolling the plane around, with the program running completely

smoothly, shows off the state-of-the-art graphics in impressive style.

However, for all its technical excellence, Retaliator is not without a handful of bugs and oversights. I was disappointed after all this graphic extravagance, that when you crash your plane, you never get to see it explode, even with the exterior views, unless you eject. Even then you'll only see it engulfed in flames if you happen to be facing in the right direction as you eject. While the interior "look-around" views are excellent, those from the imaginary spotter plane are surprisingly limited, lacking the 360 degree panning feature of Falcon. Piling into the ground is a regular occurrence when you're not paying too much attention to your altitude. A tiny warning light flashes as you're about to hit the ground, but without a shadow beneath the plane, or an audible bleep, too often death comes as a complete surprise. An option to bypass the menus and refly the mission would have relieved some of the frustration.



Another quirk concerns the lack of tanks. Some missions involve destroying a battalion or two of tanks, but on every such mission I attempted (bar the test mission), the tanks were nowhere to be found. Often you'll fly around for a while where the tanks are supposed to be, see nothing for a few minutes, and then be congratulated and told to return to base!

Despite these imperfections, Retaliator has had me bolted to my Amiga for the past week or so. It's one of those games that seems to take you through a time warp. Boot up for a quick couple of missions in the morning, and before you know it you've missed two meals and it's time to turn in for the night! This game eats hours like nobody's business!

The freedom to enter any of the warzones, with any weapons you choose, means that if you want, you can be completely anarchic, blowing up allied airbases, and generally doing your own thing. Fortunately the rough edges are far outweighed by the fast, detailed graphics, enormous tasks and extremely addictive gameplay. One of the very few 16-bit games well worthy of the asking price. Highly recommended.

T.H.

Graphics: 93%	Sound: 67%	Playability: 91%
ABSOLUTE VALUE: 91%		Price: £24.99

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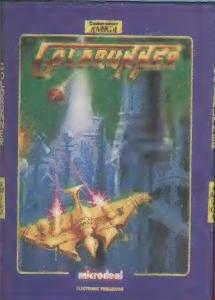


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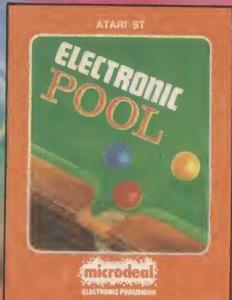
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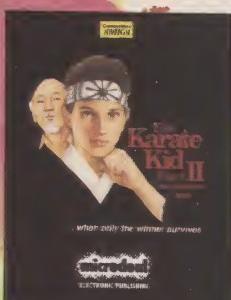
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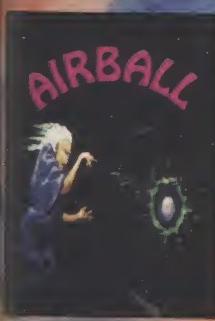
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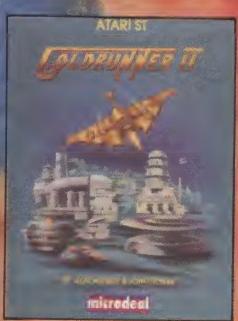
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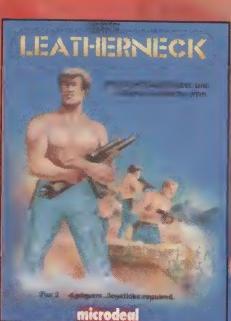
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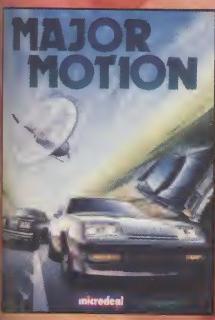
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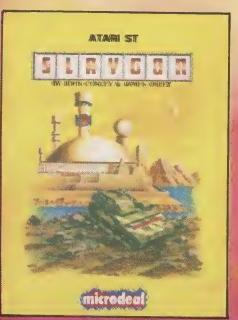
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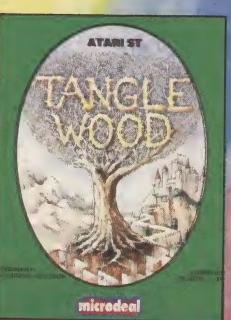
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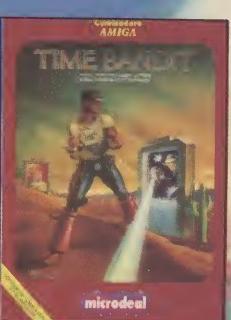
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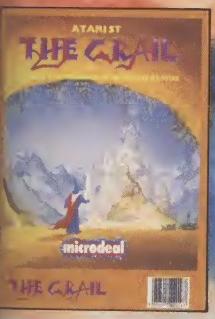
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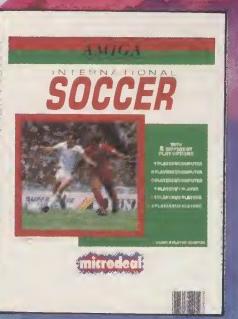
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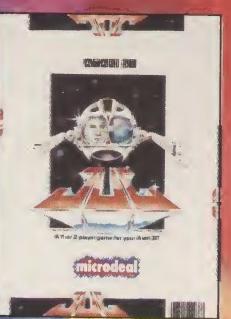
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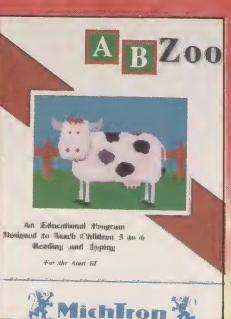
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Gremlin

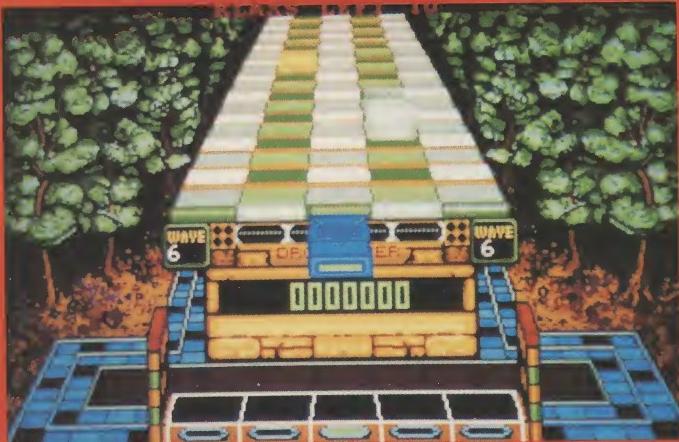
Skateboarding has been the basis for some great games in the past. Skidz gives you a comparatively limited range of moves, in a game similar to the 8-bit Skate Crazy. You've taken it upon yourself to clear litter from six areas of your town. This has to be done within a time limit, before your energy runs out. You can choose to take either a bike or a skateboard with you, although the difference between the two is

hardly noticeable.

Although the sound is disappointing, the cartoon graphics are big and colourful. You get an overscanned PAL screen, which scrolls very smoothly, but the weird viewpoint can be confusing. The game plays well, and will please younger joystick jockeys, but isn't in the same league as Skate or Die.

Absolute Value: 74%

Price: £24.95



Krax

Domark

If you had months of block-stacking fun with Tetris, how about doing it all again with Klax? The game formula is very similar: coloured tiles move to the front of the screen on a conveyor belt, where you then have to stack them in diagonal, horizontal or vertical lines. Put three of the same colour in a line, and they disappear, knocking one off your "klax" count. Higher points are scored for diagonal and double klaxes.

The graphics surrounding the conveyor belt are changed from time to time, but other than that the game looks no different from start to finish. I can't say it bowled me over, but if you're into plain puzzle games, give it a shot.

Absolute Value: 62%

Price: £24.95



Cyberball

Domark

According to Cyberball, the future of American football will see human players completely phased out in favour of robots. The game has no major differences from the real thing, and follows the style of just about every existing US footie game. You get a load of offensive and defensive moves to choose from, and can opt to play as any of six pre-set teams. On offense, you control the quarterback, before switching to the receiver as you attempt to complete the pass. Your job in defence is simply to intercept the ball or stop your opponents advancing.

It's all presented with an adventurous 3D vertically scrolling pitch, which works well in the coin-op, but I suspect it's this that slows down the Amiga version. The lack of speed is a shame, as it spoils an otherwise interesting variation on the game. Still, gridiron fans should find enough to keep them happy for a while.

Absolute Value: 69%

Price: £24.95

REPORTS



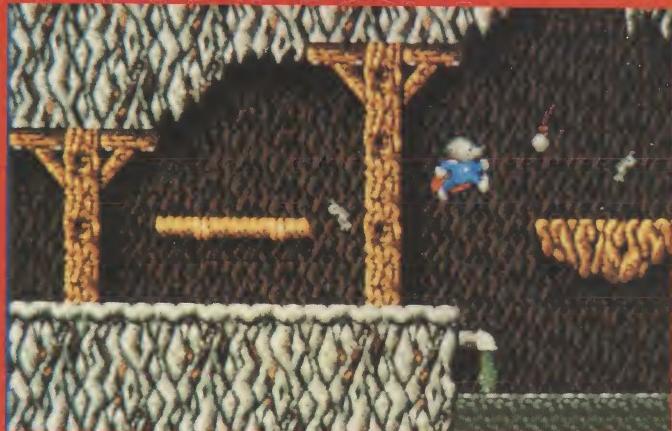
Blue Angels Accolade

Blue Angels gives you the chance to show just how good a pilot you are, placing you in the Blue Angels formation flight team. After you've practised the various stunts in the simulator, you can go and perform them in front of an excited crowd. The computer controlled planes know exactly what they're doing, which makes your mistakes look even worse.

The idea of a formation flight simulation is inviting. Unfortunately the promising design of Blue Angels is let down by poor programming. The screen update is so slow, even with ground detail on the low setting, that it fails to put across any convincing illusion of movement. A missed opportunity.

Absolute Value: 50%

Price: £24.95



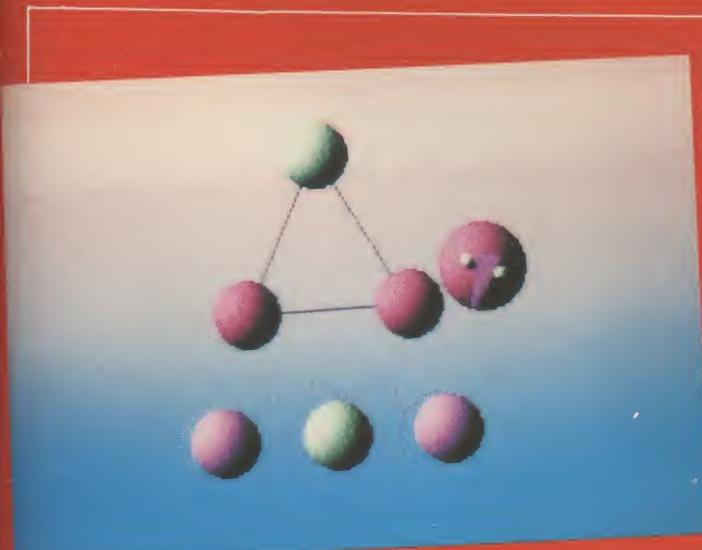
Impossamole Gremlin

Dragged out of retirement to save the world, Monty Mole is back in his least enjoyable game so far. Coming from Core Design, Impossamole is very much in the Rick Dangerous/Switchblade mould. It's platform negotiation as usual, but this time it doesn't quite make the grade.

There are 200 screens of midget sprites and natural hazards to avoid. Considering Monty is supposed to have been transformed into a superhero, the odds are stacked very heavily against him, and deaths seem to be more down to bad luck than bad stick handling. Give me the Monty of old any day.

Absolute Value: 59%

Price: £24.95



E-Motion US Gold

One of US Gold's new line in original games, E-Motion is a weird game. Each of the fifty screens contains a collection of coloured balls. These all have to be cleared before you move onto the next screen. With your Asteroids-style ship, you have to knock balls of the same colour together, which makes them both disappear. However, knock two different coloured balls together, and a third ball appears. This can be picked up for extra energy if you're quick, otherwise it'll expand and add to your task.

The fun is jolted along by the strange sound effects, which combine to make a kind of music. Long term appeal is limited, and for five or ten pounds less, E-Motion would make an excellent buy.

Absolute Value: 70%

Price: £19.95

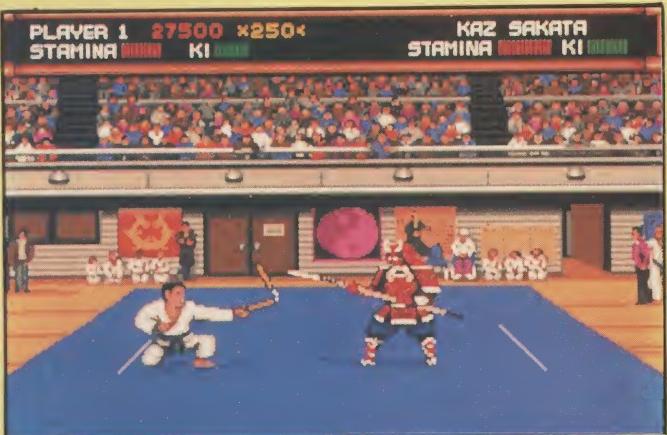
T.H.

Budokan

Electronic Arts

One-on-one martial arts games have been around for a considerable time now, most examples of which have taken almost identical approaches to the theme. It is good to see that with Bodokan, Electronic Arts have made an effort to come up with an entertainment that has something different.

As a fresh-faced novice martial artist, it's your ambition to win a competition at the Budokan, the venue for the most prestigious functions in martial arts. The game opens with you standing in the middle of a courtyard. Around the courtyard are five halls. To take part in the Budokan event, you'll need experience in karate, kendo, bo and nunchaka, each of which can be learnt in the halls around the courtyard.



As you enter a hall, you're given the choice of either practising alone or with an opponent. Opting to practise alone gives you the opportunity of working out the various moves without a wise old master kicking you in the guts. The many moves are accessed in a similar way to most beat 'em ups, only here they're a little more complex, but still logical. Rather like Martech's old jodo game Uchi Mata, you often have to use series of joystick movements to get the most out of your fighter. One advantage of this is that it allows for more available moves. With the four

disciplines combined, there are over eighty attacking moves at your disposal, with plenty of defensive strategies to choose from.

When it comes to the Budokan contest, you'll have to fight opponents who use different martial arts (eg. karate vs. kendo), and you get a feel for this by sparring with fellow students. If you want to you can skip all the preliminary stages and go straight into the Budokan. The competition uses a knockout system, in which you have four chances to defeat the current opponent, who has only one chance to defeat you.



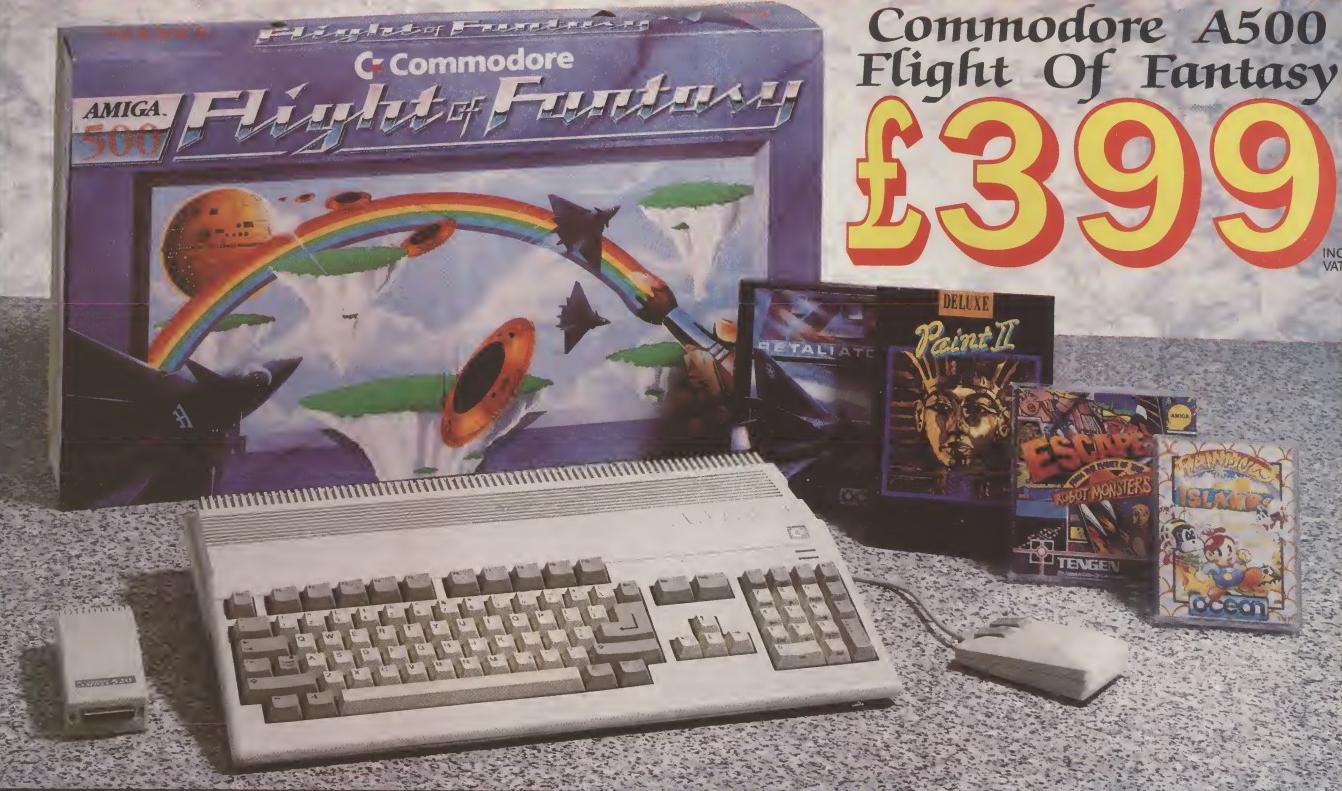
With the exception of the kendo characters, all of the sprites are very well drawn, although the animation could be swifter. While it's obvious that the designers have put a lot of time into developing a more serious beat 'em up, Budokan is let down by its often unresponsive controls and slow-moving fight sequences. As with most games that appear from the States, the game is full of interesting little details and cut-screens, but they can't disguise the tepid gameplay. Best suited to those interested in oriental traditions than beating the hell out of everyone in sight.

T.H.

Graphics: 77%	Sound: 75%	Playability: 65%
ABSOLUTE VALUE: 66%		Price: £24.95

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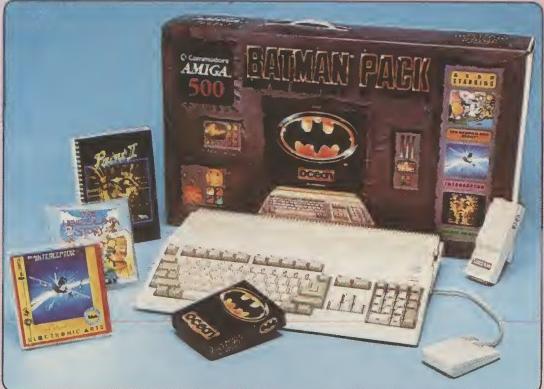


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688 ATTACK SUB



688

Attack Sub

Electronic Arts

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OK, so I know it is "just a game" and all I am doing is controlling a piece of electronic wizardry but, if there were a prize for "Computer Generated Excite-





ment", then this latest release from Electronic Arts would surely be in the running for the top spot.

"688 ATTACK SUB" puts you in command of either an American Los Angeles or Soviet Alfa class submarine, as you "prowl through a dark, undersea world, carrying out dangerous missions which require predatory cunning and bold action". Both types represent the best in submarine warfare that the relevant Navies have to offer and come equipped with a level of equipment that, at first, can be quite bewildering.

Control of your sub is achieved by moving into the required department (Navigation, Sonar, etc.) from the CONN (Conning Tower). Each section contains all the necessary controls for that particular departments' function, for example, the Weapon



Control Panel is where you can load torpedoes, missiles and noisemakers, select a target and launch a weapon.

There are 10 different missions to choose from and, for most of them, you may elect to play on either side. The missions progress from a state of "Cold War" to total all out warfare. Where a choice of side occurs, the missions are also opposing - if, as the American Commander, your mission were to intercept a convoy and destroy it, as the Russian Commander you would have to prevent this from happening.

The game is supplied on a single, unprotected disk which you are encouraged to copy and put in a safe place. Protection takes the form of three-letter entry from the manual before play can commence.

Once you have selected your mission and subtype, the screen will show the interior of your CONN. As you move the cursor around the screen, over the various crew members at their stations, it changes to indicate which department of your sub

"You will only survive if you practice hard and learn to use your mind as well as your torpedoes and missiles"

for which that particular crewman is responsible - a sextant for Navigation, a Torpedo for weaponry etc. Clicking the mouse button will then take you into that department. The keyboard may also be used.



Your first task is to visit the Radio Room, establish a satellite link with your Base and read your mission orders. It is then up to you, you will only survive if you practice hard and learn to use your mind as well as your torpedoes and missiles.

When I first played 688 it seemed to run very slowly however, you have to remember that this game is played in real-time and is not of the "wham-bam-shoot-everything-that-moves" genre. In some of the later missions I wished that I could have slowed the game down, things were happening so fast it was almost impossible to keep up with all the actions that I knew I had to make to survive. If this is what real submarine warfare is like then the guys that command this type of ship deserve every penny they get!!

688 Attack Sub will not appeal to every game player, it requires a lot more effort on the part of the player to achieve successful results. Those players that have enjoyed other Submarine Simulations should find 688 a real challenge. In my opinion, it is possibly the finest program of its type, to appear on the Amiga.

N.S.

Graphics: 72%	Sound: 66%	Playability: 84%
ABSOLUTE VALUE: 82%		
Price: £24.99		



Italy 1990

US Gold

U S Gold's '86 World Cup tie-in was one of the biggest disappointments in computer gaming history. After splashing out for the licence and a big advertising campaign, the company found themselves without a game, with very little time until the start of the World Cup. Artic's existing World Cup game was bought up in the nick of time, coming as something of a shock to the unlucky punters. This time however, they've pulled out all the stops, and managed to make the tight four year deadline.

"Winning the ball isn't too difficult, but not so easy as to break up the flow of the game."

You can choose to play as any of the teams that made it through to the finals. The teams are placed into groups according to this year's draw, so if you opt to play as England, you'll face Eire, Holland and Egypt in the first group. Before the first game, you have to select the team from the squad. You can then modify your choice between every following game. Scores and forthcoming games are announced by a charming Lee Majors lookalike, who sits behind his desk winking and pouting provocatively between games.

With all the pre-match formalities over, the teams run out onto the pitch to the backing of a Blankety Blank style jingle. Sadly that's almost the only sound to leak from the speakers until the next

jingle comes along. There's not so much as a squeak from the crowd, and the only other effects are a whistle and a click as the ball is kicked. The sprites on the other hand, are some of the best seen in a footy game. Realistic-looking, athletic players make a nice change from the usual lethargic cartoon characters. The second pleasant surprise with the graphics is the overscanned PAL playing area. Add to this a sizable pitch, and you have the makings of a great game. On the downside, the scrolling is a tad jerky, which takes a bit of sparkle off the game.

The World Cup trophy, officially called The Jules Rimet Trophy, was named after the one time president of FIFA. During the 1920s, Rimet campaigned for an alternative to the Olympic football competition, which he believed was no longer a test of the world's best football, due to the ban on professional players. The trophy currently contested in the World Cup is not the original. After winning the competition for the third time in twelve years, Brazil were given the original trophy in honour of their outstanding achievements.

Control of your players is fairly standard. You can kick the ball at various strengths, or if you're feeling adventurous, you could try a chip. Headers have been included, but are far from spectacular. Tackling is nicely done. Winning the ball isn't too difficult, but not so easy as to break up the flow of the game. Goalies are under your control, but there's rarely an opportunity for any dramatic saves.

There are a few different ways of scoring that are reasonably reliable. Even so, most of the more elaborate build-ups will be quashed by the better teams, forcing you to rely on the most effective shots. In that respect it comes nowhere near the flexibility of Kick Off 2. There's no player-control over the corners, which are automatically punted halfway back up the pitch. If a game goes to penalties, you get a 3D view from behind the striker, this time under your control.

With the game, you get a booklet of World Cup facts, player profiles (including some appalling portraits), and a calendar of fixtures for you to fill in through the tournament. The game itself doesn't have the depth or addiction level of Kick Off, and it doesn't take long to get your hands on the World Cup, so it's rather short on staying power. Although at first it seems there's a lot to the game, its limitations show up before long. As players with the ball can run as fast or faster than the rest of the players, the most effective technique is to use just one man, from kick off to goal scoring.

It's so easy to score from the centre, that games between two evenly matched opponents usually end up with something like a 9-9 scoreline. One player scores, the other takes the centre, dribbles it straight into the opponent's net, and the pattern goes full-circle within seconds! Yet another shallow, under-developed football game. T.H.

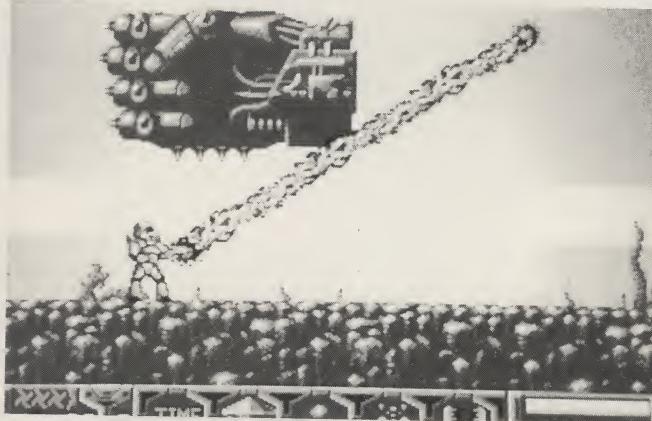
Graphics: 78%	Sound: 5%	Playability: 55%
ABSOLUTE VALUE: 53%		Price: £24.95

Turrican

Rainbow Arts

Too often we have to settle for second best when it comes to arcade games. Dodgy scrolling and lethargic sprites are commonplace, as so many programmers ignore the hardware that's there to cope with those problems. Rainbow Arts on the other hand, have a reputation for being some of the best Amiga programmers in the world; a reputation that was boosted by their superb conversion of R-Type, not to mention the controversial Denaris. Now the team behind both of those games is back, with the enormous shoot 'em up Turrican.

The storyline has you on the case of some oppressive monster, who's gone one step too far and needs to be taught a lesson. Of course he's hidden away behind thirteen levels of semi-intelligent security devices, but you've come prepared.



Following the first law of computer games, you rightly assume that the enemy is to your right. Seconds into the game, the aliens begin their attack. This gives you a good opportunity to test out all of your hi-tech weaponry. The laser under your arm at first fires a single stream of photon blobs. Shoot and collect the capsule floating overhead, and it can be

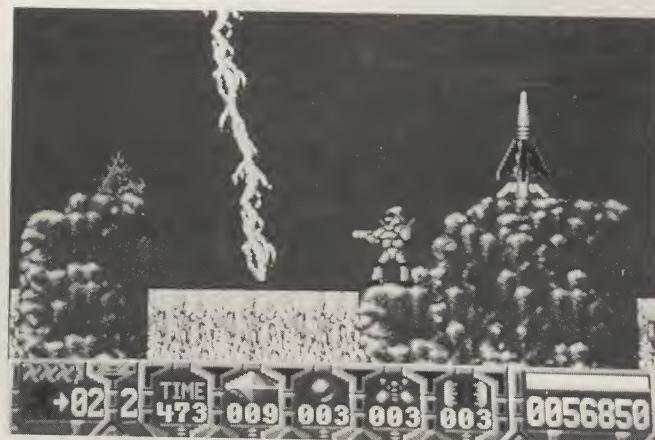
"Shoot and collect the capsule floating overhead, and it can be upgraded to a five-way death machine."

upgraded to a five-way death machine. Holding down the button releases a column of pure zap, which you can wave about with ease, frazzling aliens at a safe distance. Mines can be used to kill or maim nearby enemies, as can grenades and energy waves.

"Scrolling and sprite animation is excellent, topped only by the frequent special effects and daunting mother-alien."

With such a devastating arsenal, you might expect it all to be a walk over. That's not the case however, as the abundance, speed and size of the aliens is also pretty awesome. Level guardians put in a regular appearance, but you'd do well to keep an eye out for them even at the start of some levels. It's also worth investigating some of the little caves and chambers, many of which are stocked up with bonuses and extra lives. There are also invisible bonus blocks scattered throughout the levels, which are only revealed if they happen to be shot. Zap these, and loads of weapon upgrades and other goodies are strewn around the screen, waiting to be scooped up.

Considering the size of the game, the levels are surprisingly varied, and are all full of surprises. Scrolling and sprite animation is excellent; topped only by the frequent special effects and daunting mother-alien. The sound effects too are superb,



although the music is a little less impressive. Turrican is way ahead of any recent coin-op conversions. With the most zappable aliens of anything seen in ages, it should be at the top of every laser-fan's shopping list.

T.H.

Graphics: 91%	Sound: 88%	Playability: 88%
ABSOLUTE VALUE: 88%		Price: £19.95



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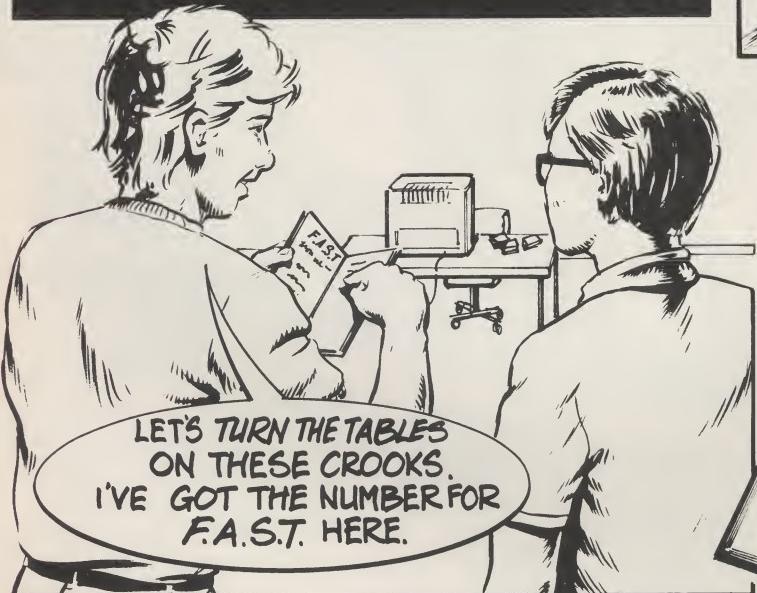
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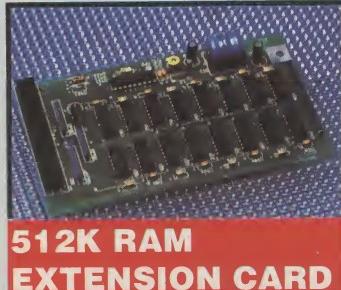


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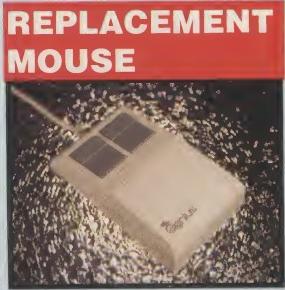


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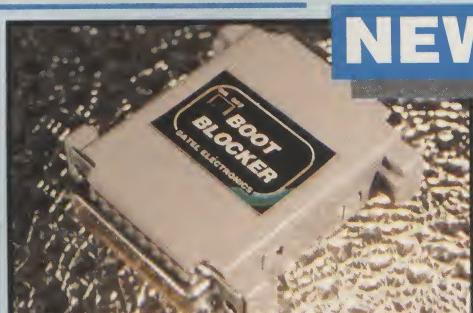
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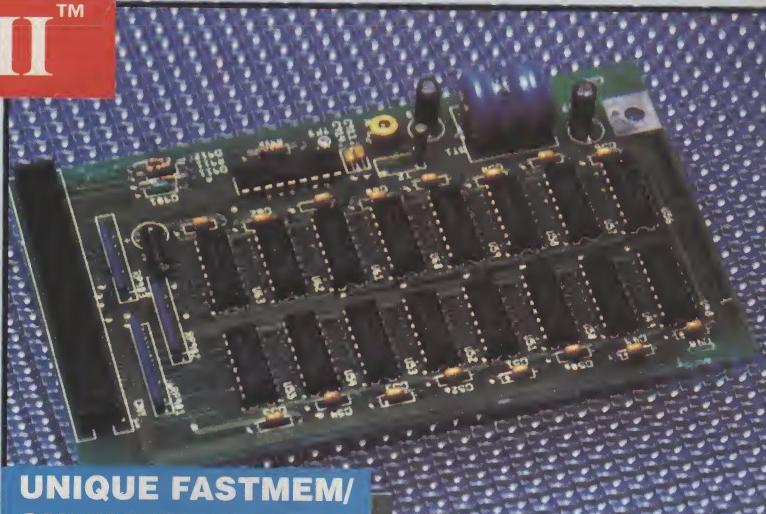
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3. Kick Off 2	Anco	(-)	97%	£19.99
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7. Escape from Singe's Castle	Empire	(9)	66%	£44.95
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9. Hard Drivin'	Domark	(2)	80%	£19.99
10. Their Finest Hour	U.S. Gold	(-)	90%	£29.99

Death of a Chipmaking Genius

Robert Noyce, one of the people who have had the greatest influence on our world today - or at least the computer sector of it - has died. Noyce, 62, the inventor of the process that produced the microchip and so sometimes called the "Father of the Personal Computer", suffered a heart attack, collapsed and died in Austin, Texas just 31 years after the "Planar Process", which he invented, revolutionised the computer world by making possible the commercial manufacture of semiconductors. The process was a system for storing integrated transistors on a single chip which became known as integrated circuitry.

Just four years after he left the Massachusetts Institute of Technology in 1957, Noyce had created the idea and founded Fairchild Semiconductor, the world's first chip manufacturer. In 1968, he went on to start Intel, today with Motorola, the leading chip manufacturer in the world especially known for its creativity of design.

Intel was the first to develop S-Ram (Static Ram) chips and then led into the D-Ram (Dynamic Ram) field. It also created the first microprocessor - the 4 Bit 4004 in 1971. A year later, Intel released

the first 8 Bit device - the 8008. It was the development of this family of chips, with the 8080 in 1974, running at 290KHz, and its later descendants such as the 8086 in 1978 that led to machines like the Commodore Pet and subsequently

with the 8088, a cutdown version of the 8086, the IBM PC that has now spread throughout the world.

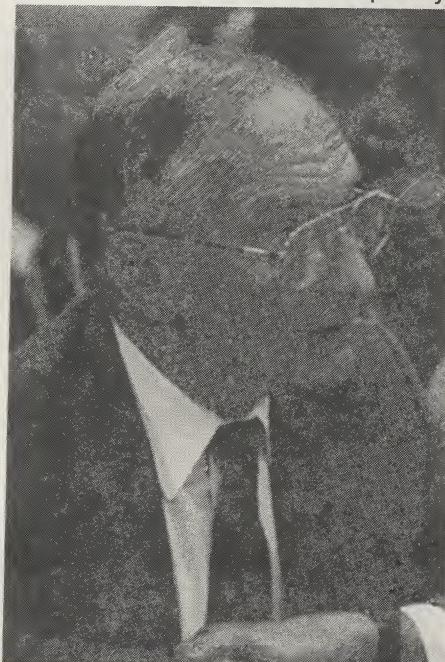
The 8086 ran at the then amazing speed of 4.77 Megahertz and was the first 16 Bit chip to be commercially produced. The most recent development of the series, the 80486 now offers 33 Mhz about a hundred times as fast as the old 8080.

Intel, under Noyce's leadership, also developed RISC (Reduced Instruction Set Computer) chips like the i860 which are dedicated devices and gradually making their presence felt in the international market.

Sir Clive Sinclair, Noyce's nearest equivalent in the U.K. commented that Noyce's death was a sad day for the industry worldwide. "He was a very brilliant man and everything we do was helped by his pioneering work

"Intel President, Andrew Nove said that Noyce was "A man of vision...He threw ideas at other people and let them develop them. He never stepped in front, though he had the right to do so."

During his career Noyce received many international honours including the U.K.'s leading scientific award, the IEE Faraday Medal.

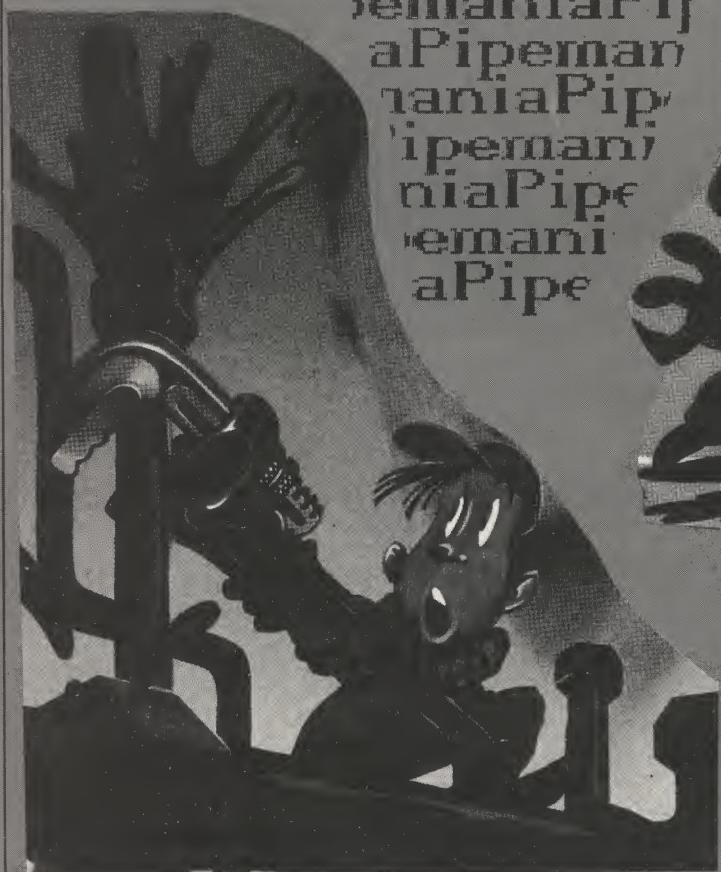


Pipemania

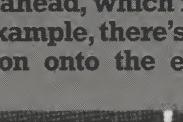
Empire

All graphics and no gameplay" is a criticism often leveled at 16-bit games. Pipemania on the other hand, veers to the opposite extreme, with a blatant disregard for graphical splendour but scoring highly on its gameplay. Programmed by The Assembly Line (the coders behind Xenon II and E-Motion), with input from Lucasfilm Games, it continues the current trend of simple but taxing puzzle games.

The screen is laid out as a ten by seven grid, onto which you place sections of pipe. These appear in a semi-random order from the box at the side of the grid. You can put the pipe sections almost anywhere on the grid, but you can only take them out of the box in the order they appear. The computer decides from which square your pipeline will start. You then have a short time to assemble the first few pieces, before the "flooz" begins working its way along the pipeline. You then have to keep ahead of the flooz, laying down as many pieces as possible, ensuring a watertight passage.



As well as the next available piece of piping, you can also see the following four. This allows you to plan ahead, which is essential in the later levels. If for example, there's no way you could fit the current section onto the end of the pipeline, you could mentally project the course of the pipeline to see where it would fit, and put it there. However, concentrate too much on forethought and you're likely to construct a pipeline filling the screen, but forget to lay down the second piece!



The flooz will keep on flowing for as long as you can build the pipeline. Screens are cleared by successfully laying down the minimum amount of sections, the number of which increases as you progress.

Later levels introduce more hazards, along with a few bonuses. Reservoirs buy you a little extra time, and end pieces award you with a bonus if incorporated into the pipeline. Dead squares and one-way pipe sections are also brought in to catch you out.

The concept of Pipemania is clever one, and one that certainly does work well without backup from stunning audio-visuals. Once you get the hang of laying down sprawling pipelines, it can be very hard to stop

playing. The password system helps lengthen the game's appeal still further.

Pipemania is clever and the kind of game which, for many, will prove highly addictive. It certainly is a neat idea, very well executed and a lot of fun. Recommended. B.V.

B.V.

Graphics: 40% Sound: 45% Playability: 68%
ABSOLUTE VALUE: 70% Price: £24.95



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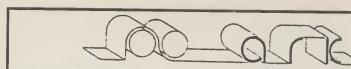
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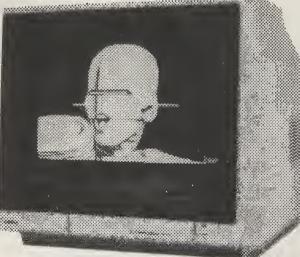
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Manchester United

Krisalis

Game designers seem to have come to the conclusion that a straight forward football management, or football action game is old hat in the eye of the punter. Why settle for one or the other when you can have both? Manchester United may just hold the answer.

The game is split into management and action sections. You can opt to switch out the management sections, but not vice versa. So, even if you don't take part in the matches themselves, you still have to sit through them while the computer controls both teams. An option to skip the matches would have made the game playable solely as a management game, if the player wanted. With matches lasting at least ten minutes, you could play for a couple of hours without making any substantial managerial decisions. As a purely managerial game, it fails, but things pick up if you take part in the matches yourself.

On the strategical side, you'll find most of the standard options available. Players can be bought and sold, and each player can be trained in any of five specific areas, such as accuracy and speed. The fitness of every member of your team can be checked by clicking on his name from the squad list. A digitised picture accompanies his statistics. There's really very little for the manager to do. What is included just about covers the bare minimum needed to give you any kind of control over the team. About all it comes down to is buying, selling and training players.

When it comes to the match day, you can either leave your team to get on with it themselves, or step

in and take control. As usual you have control of the nearest player to the ball. You can kick the ball at various strengths, determined by how long you hold down the button, but an accurately weighted ball is very hard to deliver. The first problem once play gets underway, is making out just what is going on. It's obvious that the game was developed to ST specifications, and as you'd expect, the scrolling and sprite animation is below standard. This is a major problem, as much of the time you can't tell where the ball or where your player is. The result is a game that plays like a drunken kickabout.

Tackles have been included, but are far from spectacular. Building up attacks using a number of players is an impossibility. Kick Off partly got around this problem by giving the players intelligence, so that instead of just kicking the ball straight ahead, they would aim towards another player. Because of the lack of any such feature in Man United, you can forget ideas of running down the wing, crossing the ball into the box and nodding it into the net. As with most failed footie sims, you'll find yourself taking the same old shots time after time, simply because there are only a few of ways of scoring.

Anyone looking for a football management game is going to be disappointed by the shallow strategic section. Those looking for an exciting, realistic or involving arcade section will suffer the same fate. Thorough play-testing would have riddled out most of the gameplay faults. That along with a proper use of the Amiga's graphics facilities, would have made a great game.

T.H.

Graphics: 58% Sound: 20% Playability: 54%

ABSOLUTE VALUE: 50% Price: £24.95

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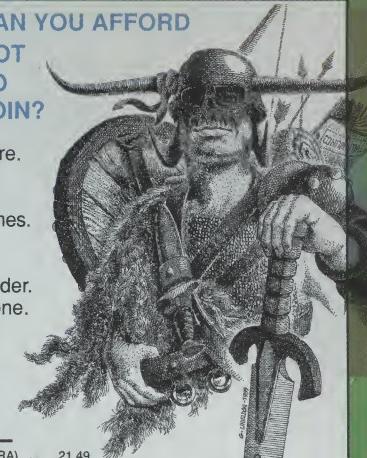
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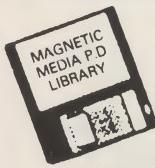
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Amiga Answers

Andy Eskolson searches out the answers to your tough technical questions

Dear AUI,

Every now and again when I switch on, my caps-lock button begins flashing and the keyboard will not work. The only way I can cure this is to switch off for five to ten minutes. My friends with Amigas say they don't have this problem. Is it common or is my equipment faulty? (I have a second drive and Amstrad LQ3500di printer connected to my 512K A500, but the problem was there before these were connected.)

D.R. Meek.
King's Lynn

Dear D.R. Meek,

It looks as if you have a faulty keyboard.

The Amiga's keyboard has its own microprocessor that performs the task of scanning the keyboard matrix. This reduces the overhead on the Amiga, allowing it to get on with the more complex processing.

Because you have two processors they must communicate with each other, and this is done over a serial link into one of the I/O chips inside the Amiga. Before the keyboard starts sending data to the Amiga, it performs a self test. If the self test passes then you will not know anything about it, but if it fails, the keyboard will blink the caps lock LED at you. The caps lock LED blinks in bursts, approx at one sec intervals, here is what the blinks mean: One blink.

Rom Checksum Failed
Two Blinks.

RAM Test Failed

Three blinks.

Watchdog timer test failed

Four blinks

A short exists between some keys, however the documentation states that this is an unimplemented test.

Dear AUI,

I have a B2000 rev 6 with a GVP SCSI controller, Quantum hard drive and 2 meg of expansion ram. I have been experiencing numerous yet intermittent problems over the last few months and hope that

you may be able to help.

Shaun gives information of GURUS, switching into NTSC modes etc.

Shaun Watts
Wickford

Dear Shaun,

Sorry I've got some bad news for you. The rev 6 motherboard had some timing problems with it that caused problems with 3rd party hardware. CBM changed to the rev 6.2 motherboards very quickly. (The problem also existed with the rev 6.1 board so I am told)

The NTSC problem is a known bug, and there is a fix program about that overcomes it, it is available on a 'free disk' and from several BBS's.

You do not say what ram expansion you are using, but all of your crashes seem to occur in the 8 meg fast ram area but the GURU messages, \$00000003/4/b mean : Guru 00000003

Alert Type:68000 Trap
General Cause:Address error
Guru 00000004
Alert Type:68000 Trap
General Cause:Illegal instruction
Guru 0000000b
Alert Type:68000 Trap
General Cause:Line F Emulation

You could try swapping the position of the expansion boards that sometimes helps the only thing that you can do is contact your dealer and point out the problem to him, he might be able to help with a motherboard upgrade.

Dear AUI,

I recently bought some software from the Public Domain and ambitiously decided to copy some of the programs to a separate disk and construct some icons for them, thus enabling me to run them from the workbench instead of the CLI or the original PD disk. (Which incidentally uses a function key menu).

When I double click on my icon the program appears to load up ok, but instead of running gives me a task held error message and promptly gurus

(87000004.265f481f1)

The program runs from the CLI using the same disk with no problems. Am I doing something wrong, or can some software only be run from the CLI. The program in question is Games Music Maker.

J. Barrett,
Northampton

Dear J. Barrett,

Sometimes programs can only be run from the CLI due to memory shortage, however such programs are generally on self booting disks so that is not your problem.

The Guru you quoted is a DEADEND Alert generated by the DOS Library, which was cause by an Unexpected packet received. In simple language, DOS got confused!

This was probably caused by your Icon, as it is not simply a matter of drawing an icon and giving it the program name.info identity. There are several different types of Icon, Trashcan, project to name but two. What you need to do is to create a SCRIPT file that will run your application something like this should do the job:
CD To-The-Correct-Directory
RUN NIL: Your-Program
Save this file in the directory where the program is

Use a PROJECT ICON, the Shell Icon will do for this, and make a copy of it, renaming it to 'Scriptfile-Name.info'

Not much to do now, click on this icon ONCE and select INFO from the WB menu. Change the DEFAULT TOOL to C:ICONX and click on the save gadget that is all there is to do. When you click on the icon it will Execute the script file that will in turn run your program. You can jazz up the Shell Icon with your favorite Icon editor. This operation assumes that you are Amiga-Dos V1.3. Look up ICONX in the enhancer software manual for more information.

Dear AUI,

Can you possibly help me? I would like to know whether any programs exist that would facilitate timekeeping of motorcycle races. (Any Lap event would do) It would have to be able to cope with 50+ competitors, recording lap and average times, speeds etc.

If there are not any programs that will help, could you give me some suggestions on how to program such an application. Should I use the keyboard or a device similar to the BBCs concept Keyboard. Perhaps even the mouse would be useful.

George Peach
Castletown, Isle of Man

Dear George,

I do not know of any specific program for your application.

Programming such an application would be fairly easy depending on how you enter the data. If you use a conventional stopwatch type system and feed the

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Amiga Answers

time into the Amiga via the keyboard then I would suggest that you use a programmable spreadsheet. ANALYZE! would do the job, set up the rows to indicate each competitor, and have one color for every lap, program some other cells to display the average of the laps, and the speed of each lap.

If you want to use the Amiga as the stopwatch, then that is another matter. You could try out CanDo by Inovatronics, that allows you to create interactive applications very easily, but you are talking about a reasonably complex project.

Dear AUI,

I recently purchased an Amiga 500 with an A501 expansion board and two drives, having (until then) survived for years with my old BBC-B. I've had few problems setting up but I cannot seem to get my printer working properly. I have a Canon PW 1080A printer which is similar to the Epson FX80 and by loading in the EpsonX printer driver I can use the print style escape codes as listed in the Abacus book AmigaBasic Inside and Out. My problem is that I still cannot seem to alter the line spacing, line length, margins etc using the relevant escape codes; something that I need to do to be able to produce several different printouts from my home made databases.

Can you please tell me if I'm doing something wrong or whether I'll have to live within the constraints!!

Also How can I get my script-file startup sequence to load the printer driver in as it boots up to save the delay occurring when the program is running.

Kevin Oakley
Westcliff On Sea

Dear Kevin,

I used the PW 1080A for a long time on my Amiga with very few problems, but I also found that some of the escape codes did not work. The reason is this, the printer driver is NOT totally compatible with the 1080A.

You have a number of choices, the first is to live with the problem and do nothing else.

The next is to write your own printer driver, there is a utility called PrtDrvGen available from the PD library sources that will build a custom driver (It is in the ICPUG library and available for download on CIX).

The third option and the best in your case is NOT TO USE A PRINTER DRIVER. This is very easy to do. Instead of sending

your output to PRT: you send it to PAR: this sends the data directly to the parallel port without any conversion. You can then use the escape codes quoted in the 1080A handbook.

To load the printer driver at from the startup-sequence, run the program, initprinter. This will force the driver to be loaded.

Dear AUI,

I have an A500 with an external drive and an A590 hard disk, fitted with an extra 2 Megabytes of memory, which I use mainly for D.T.P. with Professional Page V1.3 and output to an NEC P6 printer. When using this program and saving to a data disk in the external drive I get read write errors perhaps every 10 saves or so. Once the requester drops down, clicking on re-try and cancel has no effect and I have no option but to exit the program with a warm break and lose my data file.

Is there any way to exit from the read write error loop and save the data to a new disk, and why am I getting so many read write errors, I am using good quality Maxell disks.

From now on I am going to put my data disk into DF0: but this means I have a redundant external drive and I don't even know if this will help!

Neil Bramwell
Bushey, Watford

Dear Neil,

This type of problem is very hard to track down, so all I can do is offer you a few pointers that might lead to the problem.

The read write errors MIGHT be due to faulty disks, but it is unlikely as you use good quality disks, however try a couple of disks from a different batch, or another make just in case you have a dud box.

I wonder where the disks were formatted, if you formatted them on the external drive then there should be no problems, but if you formatted them on the internal drive, then that might point to an alignment problem with one of the drives. Try using a disk that has been formatted on the drive that you intend to use it in. If that cures the problem then your drive needs aligning. It would also be worthwhile cleaning the heads of the external drive, a small amount of dirt on either head can cause some very strange problems. Use a disk cleaning system, and follow the instructions carefully!

If you know anyone with an external drive, try a swap and see if the fault swaps as well, if it does then the problem is with the external drive. If not then the fault is likely to be a system problem. Check the silly things such as cable connections, and power leads etc.

If the problem clears when you use DF0: then that will also point to a fault in the external drive. If cleaning does not cure the problem it will have to go back to be serviced.

It is possible to align the disks yourself

if you feel up to it, have a look in AUI aug 89 for the review of the AMI Alignment System from Free Spirit.

The requester is another problem ! I have a VERY slow external hard drive and a requester to insert a disk appears during the startup. I cannot find any way of overcoming this problem without hacking into the system. In your case there MIGHT be a small chance that you can fool the system. When the drive light has gone OUT remove the disk from the drive and then replace it. That should cause the system to re validate the disk, and hopefully the save operation will work.

Dear AUI,

I recently ordered an internal 3.5 inch floppy disk drive for my Amiga B2000 from a major UK advertiser in your magazine. Imagine my surprise therefore, when two external 5.25 units appeared on my doorstep! Attempts to exchange these drives for the correct unit have been unsuccessful - the advertiser concerned does not answer my letters, and I am loathe to spend my money on international phone calls and overseas postage for two heavy disk drives in order to correct someone else's mistake, so I have decided to try to make best use of the 5.25 drives possibly to access IBM software.

Unfortunately the drives came without instructions and I cannot get either unit to work properly. When I try to use any of the 5.25 PC utilities on the Extras 1.3 disk, I get an error message warning that no 5.25 drive is available. Clicking on the cancel box causes the Amiga to crash. On further investigation it appears as though the computer is mistaking the 5.25 drives for 3.5 units, as they are mounted automatically at power up and an AmigaDOS Initialize command will attempt to (unsuccessfully) format the 5.25 disk in the 80 track/880K format. Neither dismounting the drives using Assign DFn: REMOVE nor remounting them using the 5.25 parameters provided in the workbench 1.3 mountlist make any difference the PC utilities still do not recognize that 5.25 units are present.

The 5.25 drives in question are third party units, not CBM and the only identifying marks are labels bearing the initials CEW on the undersides. I can't believe that both drives are faulty and feel that I am reasonably conversant with the Amiga system, but this problem is baffling me.

Chris Kessell
Stanley, Hong Kong

Dear Chris,

You seem to have been slightly unlucky in your dealings with this company, but getting two drives for the price of one is not too bad!, however you seem to have fallen into a very common trap with PCUtils. In order for them to work correctly, the 5.25 drive must NOT BE MOUNTED AT ALL. If you read the 1.3 book, the command Assign REMOVE will

continued on page 104

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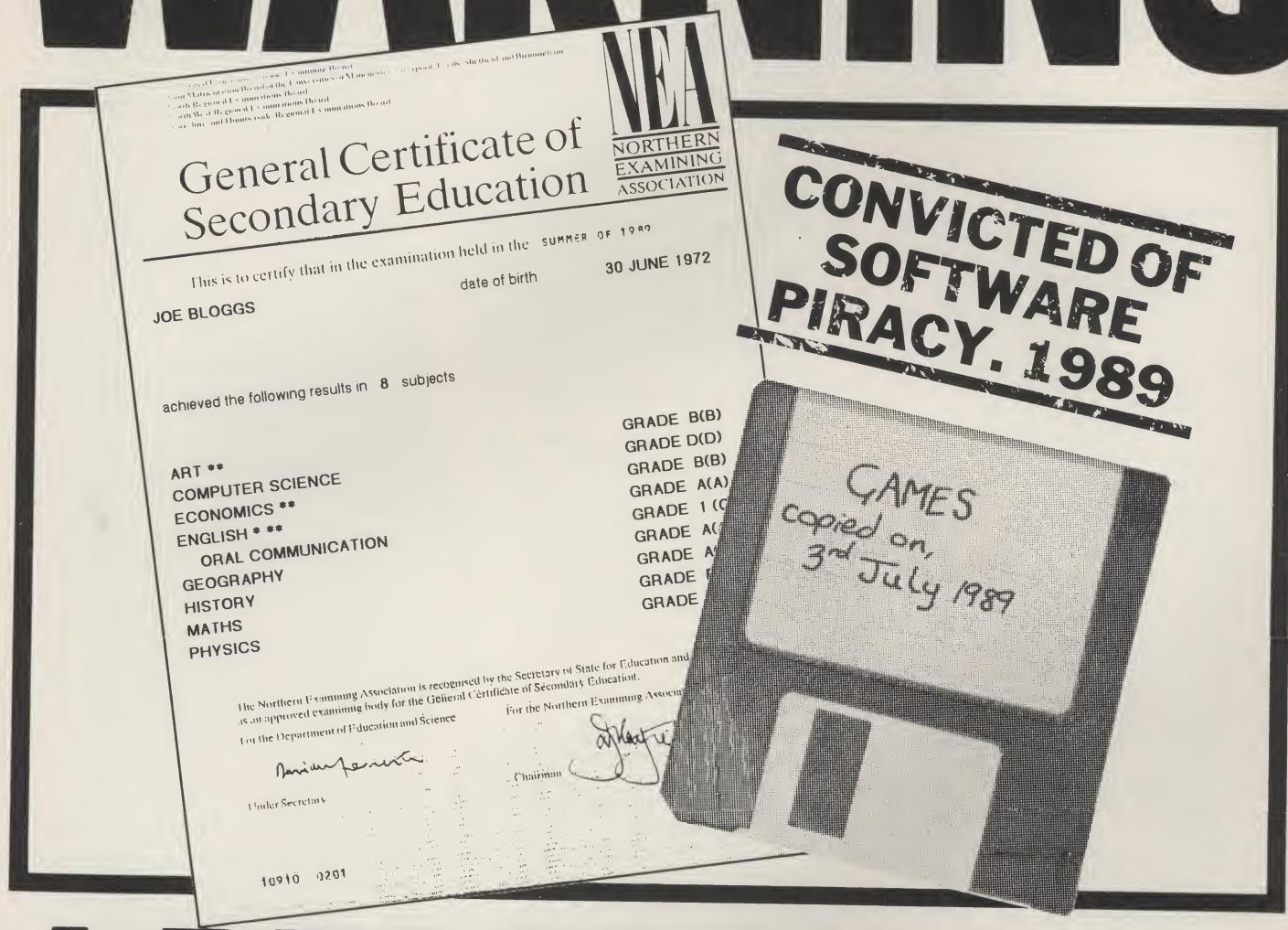
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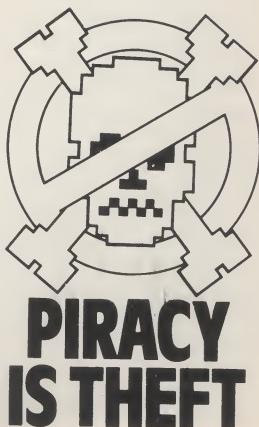


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Amiga Answers

only remove the NAME from the mountlist, this is not the same as NOT mounting the device.

Remove the mount df2: (I assume that is what you are calling the drive) from your startup-sequence and that should cure the PCUts problem.

You should also be able to use the drives as standard AmigaDos drives, but I am slightly confused as to why the system is trying to format the drives as 880K I have copied the section from my mountlist that refers to this. Do not fall into the trap of assuming that the 5.25 disks are 80 track! they are normally 40 track double sided. You can mount any Amiga device from the cli by giving the mount DF2: command, so you should be able to work the drives in both modes without too many problems.

The label marked CEW does no mean anything to me, but have a look on the printed circuit board that is attached to the drive, you will often find an indication to the manufacturer there.

/* Mount a 5.25" disk drive to be mounted as DF2: */

DF2: Device = trackdisk.device

Unit = 2

Flags = 1

Surfaces = 2

BlocksPerTrack = 11

Reserved = 2

PreAlloc = 11

Interleave = 0

LowCyl = 0; HighCyl = 39

Buffers = 20

BufMemType = 3

Dear AUI,

I have just purchased an Amiga 500, upgrading from a 48K Spectrum. I have a Brother HR5 printer and a 5.25 Cumana Disk drive which I used with the Spectrum.

Will my printer and disk drive work with the Amiga, and if so what do I require?

F.A.Friend,
Essex

Dear F.A.Friend,

It should be possible to get your printer and disk drive working on the Amiga, depending on how much effort you want to put into it.

The Printer should present no real problems, apart from deciding on the type of interface that it has. If the HR5 has a standard Centronics connector, then all you need is to purchase an Amiga parallel printer lead, and connect the two devices together.

If the HR5 has an RS232 connector (a connector similar to the serial connector on the rear of the Amiga) then you will need a suitable cable. Unfortunately there are a couple of possibilities, a careful read of the printer manual will probably help. Basically there are two possibilities, you might need a simple straight through cable, or you might need what is called a crossover. If you have a good dealer locally you might take the printer along and get him to help sort it out.

Once you have decided on the connector you will then have to set up preferences to match. MOST printers are Epson compatible, so try EpsonX or EpsonOld, failing that use generic (text only)

Preferences is also used to switch the output of the printer driver between the parallel (centronics 0 port and the serial (RS232) port. Select the correct output device, and remember to save the configuration!

The disk drive is another matter. It is possible to connect 5.25 drives to the Amiga, and such devices do exist. To get a raw disk drive such as the Cumana working on the Amiga you have to be prepared to build a small interface circuit and make up the various connectors. I will refer you to a text file on the PD disk AMICUS-8 (Text/Generic Diskdrive) should you want to pursue it further.

Dear AUI,

Having recently purchased a good quality digital Video Recorder with special FX, I now wish to connect it to my expanded A500. My intentions are of both genlocking and digitizing to and from the tape, preferably in the HAM mode, compatible with Photon Paint II.

Could you please advise me of an hardware add-on which could satisfy both these tasks, preferably with some kind of through port, so as not to upset my parallel printer or serial powered speakers too much.

Brett Buckley
Huddersfield

Dear Brett,

What you are asking for can be bought as separate units and there are plenty of switch boxes that will overcome the throughport problems. The biggest problem is cost, at a guess the lowest cost will be about 300 pounds the upper limit can be thousands!

There is one combined unit called the SUPER PIC I do not know what it is like, and it is expensive, about £540 it might be well worth a look at.

As there are so many good genlocks and digitisers about my best advice is to go and look at some of them. Then go away and think about what you really want to do THEN decide on the equipment. Have a word with DigiPro (see adverts) for some good advice. If you can get to them they are well worth a visit. Super Pic is

advertised for sale by Gordon Harwood Computers (again see adverts)

Dear AUI,

Could you please advise me how to run a self booting game with the extra memory switched off via the Workbench, all I get is a disk icon which will not run. I recently bought Little Computer People, but regret the sprites do not appear, even though the doors open and shut. I understand that the software suppliers are aware of the problem.

Len Boyne
Rochester Kent

Dear Len,

This problem is caused by the software writers not following CBMs rules, fortunately MOST software nowadays seems to work on expanded machines but that does not solve your problem.

The short answer is that you CANNOT load an autobooting game from the workbench after switching off the memory (simply done by clicking on NoFastMem) however there is another way. I recall that there was utility produced that you booted from and this gave you the option of setting the Amiga to 512K or 1 Meg and then booting the system. Unfortunately the only name that comes to mind is VC Crackers which might be a pirate version! A good dealer should know what you are talking about.

Dear AUI,

I have just purchased an A500 Amiga for my two sons. Please would you recommend some suitable software (apart from games) in respect of word processor, database, spreadsheet etc

Mrs L.P. Jackson
Wakefield, W.Yorks.

Dear Mrs Jackson,

There is a lot of that type of software on the market, and in the end it comes down to a personal preference more than anything else. I tend to use the Works! which is a spreadsheet, database, and spreadsheet package. It is fairly basic, but it does all that I personally want it to do. There are some good value special packs about as well. Have a look at the Home Office Kit, this is listed at 149 pounds, but I have seen it a LOT less than that. It contains Kindwords, Pagesetter (a desk top publishing package), Maxiplan spreadsheet, Infofile database, and Calfonts & Artists Choice. All these packages have a very good name in their own right and the kit represents a considerable saving.

If you want to buy individual packages, have a look at Digital International. I have reviewed some of their products, and for the price they are very very good, unfortunately they don't seem to have a word processor yet.

KICK OFF 2

**BLISTERING PACE –
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Kit design – 6 styles and 32 colours. (Amiga & ST only)
Facility to load Player Manager teams for a single game or league game.

Load your own designed Tactics from Player Manager. Red & Yellow cards, 16 different referees, Injury time and host of features to create the atmosphere for a game which is a real fun to play.

Special Events provision to load Data Discs or Cassettes for events like World Cup, European Cup etc...

Restricted features on IBM and 8 bit machines.



AMIGA SCREENSHOT'S

ANCO

ATC SAAST 2000



As jumbo jets land 40 seconds apart, the Amiga is helping to keep disaster out of the skies and off the runways. Bud Vennos reports.

I used to be considered a pleasure to travel by plane. Flying Imperial, later British Airways that crossed low over the Channel a few times a week London to Paris or rather Croydon to

Paris, you were treated as if you were on an ocean liner and travelling first class at that. Civil aeroplanes, as they were always spelt, were so scarce that crowds would gather just to get a look at them.

The era of gracious air travel ended in the 1960's with the coming of mass package holidays and suddenly the crowds no longer gathered to see the planes but began to jam the airports that





were constantly enlarged to accommodate them.

Today there are twenty to thirty flights a day from London to Paris and most of them from London's Heathrow, now the busiest airport in the world. If you go there, as I did recently to meet someone arriving from Paris, and park your car on the open topmost tier of the multistorey short-term car park, you can from that excellent viewpoint overlook the runways. You will see planes landing with terrifying frequency. In fact, on the same runway, at night, in the dark, I saw them coming in one after another with

"The fact that the Amiga's computing capability is so cheap did not escape the sight of the people in the CAA who originally chose it."

just about 40 seconds between each.

It is not surprising that the Air Traffic Controllers whose job it is to make sure that those 40 seconds are really enough to keep the massive jetplanes full of passengers from crashing into each other and destroying hundreds of people instantly, supposedly have one of the highest rates of heart attacks of any profession.

Yet air travel, in spite of the headline sensations it makes when there is an accident, is safer, per passenger mile, than many other forms of transport, including road.



continued on page 111

INTUITION: REQUESTERS III

Over the past months I have been describing the basics behind the requester program. Now we can consider how to get AmigaDOS, Intuition, and the program all talking to each other without too much stress on our part.

The `doIDCMP()` routine should be familiar by now to anyone who actually reads this, and, once a gadget event has been signalled, passes control to another function called `doGadgets()`. The latter receives the identifying code (`GadgetID`) from Intuition which was defined in the gadget structures.

```
void doGadgets (GadgetPtr)
    struct Gadget *GadgetPtr;
    char *Temp;
    USHORT i; /* General purpose thing */
    Temp = (char *) GadgetPtr -> UserData;
    switch (GadgetPtr -> GadgetID){
        case HARD:
            strcpy (FileName, HardText.IText);
            strcpy (DBuffer, FileName);
            FBuffer [0] = '\0';
            doRead ();
            break;
        case FLOP:
            strcpy (FileName, FlopText.IText);
            strcpy (DBuffer, FileName);
            FBuffer [0] = '\0';
            doRead ();
            break;
        case RAM:
            strcpy (FileName, RamText.IText);
            strcpy (DBuffer, FileName);
            FBuffer [0] = '\0';
            doRead ();
            break;
    }
```

```
case HARDUP:
    if (++HardText.IText [2] > '3') HardText.IText [2] = '0';
    break;
case HARDDN:
    if (--HardText.IText [2] < '0') HardText.IText [2] = '3';
    break;
case FLOPUP:
    if (++FlopText.IText [2] > '3') FlopText.IText [2] = '0';
    break;
case FLOPDN:
    if (--FlopText.IText [2] < '0') FlopText.IText [2] = '3';
    break;
case SELECT_FILE:
    if (GadgetPtr -> UserData){
        if (*(Temp + 30) > 0){
            strcat (FileName, GadgetPtr -> UserData);
            strcat (FileName, &slash);
            strcpy (DBuffer, FileName);
            FBuffer [0] = '\0';
            doRead ();
        }
        else strcpy (FBuffer, GadgetPtr -> UserData);
    }
    break;
case PROPID:
    if (Count > NUMFILES) ReBuildFiles();
    break;
case LOAD:
    strcat (FileName, FBuffer);
    printf ("Would now load %s\n", FileName);
    break;
case PARENT:
    if ((i = strlen (FileName)) > 4){
        i -= 2;
        while (FileName [i] != slash && FileName [i] != ';') i--;
        FileName [i+1] = '\0';
        strcpy (DBuffer, FileName);
        FBuffer [0] = '\0';
        doRead();
    }
    break;
case DRAWER:
    strcpy (FileName, DBuffer);
    doRead();
    break;
case FILE:
    break; /* Intuition actually handles this along with LOAD! */
default:
    break;
}
```

```

        RefreshGadgets (&FileGadgets [0], Window, &Requester);
    }

    /* This function takes the current path and reads in its directory */

    void doRead (){
        struct FileLock *FileLock;
        USHORT i = 0, n; /* General all-purpose, biodegradable counters */
        USHORT Len;

        /* First copy all filenames in directory into fileList array */
        if (FileLock = (struct FileLock *) Lock (FileName, ACCESS_READ)){
            if (Examine (FileLock, FBlock)){
                ExNext (FileLock, FBlock);
                do { strncpy (&FileList [i][0], FBlock -> fib_FileName, 30);
                      FileList [i++][30] = (char) FBlock -> fib_DirEntryType;
                      if (i > MAXFILES) i = MAXFILES; /* In case of a vast dir */
                } while (ExNext (FileLock, FBlock));
                PropInfo.VertPot = 0;
                PropInfo.VertBody = (0xffff * NUMFILES) / i;
                Count = i;
            } /* if Examine...*/
            UnLock (FileLock);
        } /* if FileLock...*/
        if (i > NUMFILES){ /* if requester isn't full, make prop gadget full */
            PropInfo.VertBody = (0xffff * NUMFILES) / i; /* anyway */
            i = NUMFILES;
        }
        else PropInfo.VertBody = 0xffff;

        /* Now copy 1st 14 files into the ITexts array for display in requester */
        for (n = 0; i > 0; i--, n++){
            strncpy (&ITexts [n][0], &FileList [n][0], 19);
            FileGadgets [n].UserData = (APTR) &FileList [n][0];
            if (FileList [n][30] > 0){
                if (strlen (&ITexts [n][0]) > 13) ITexts [n][13] = '\0';
                strcat (&ITexts [n][0], " (dir)");
                if ((Len = strlen (&ITexts [n][0])) < 19)
                    strcat (&ITexts [n][0], " ", 19 - Len);
            }
        }
        while (n < NUMFILES){
            FileGadgets [n].UserData = NULL;
            strcpy (&ITexts [n+1][0], " ");
        }
    } /* That's it */

    /* This copies NUMFILES of filenames into the ITexts arrays */

    void ReBuildFiles (){
        USHORT i, n, Len; /* Just a counter */
        ULONG Temp;
        Temp = (PropInfo.VertPot * (Count - NUMFILES)) / 0xffff;
        for (i = Temp, n = 0; n < NUMFILES; n++, i++){
            strncpy (&ITexts [n][0], &FileList [i][0], 19);
            FileGadgets [n].UserData = (APTR) &FileList [i][0];
            if (FileList [i][30] > 0){
                if (strlen (&ITexts [n][0]) > 13) ITexts [n][13] = '\0';
                strcat (&ITexts [n][0], " (dir)");
            }
            if ((Len = strlen (&ITexts [n][0])) < 19) /* 2 lines, 1 statement! */
                strcat (&ITexts [n][0], " ", 19 - Len);
        } /* Please don't leave this out! */
    } /* End of ReBuildFiles() and end of program (at last!) */
}

```

Comal on the Amiga

I have now started to use Amiga COMAL in earnest. To make this possible, I have translated a program that I have been running with BASIC since my early PET days to COMAL on the Amiga. The version of Amiga COMAL I have used is 1.4. This has been updated to version 2 but as yet I have not been able to assess the differences. I have only seen version 2.0 as the demo version on Fish disk 296. This has removed some of the bugs found in 1.4 and made some aspects slightly more user friendly. Another consideration to bear in mind is that the manual I have currently is written in Danish! There is an English manual, written by Len Lindsay, now available but I have not yet managed to get hold of it.

Amiga COMAL was developed by Freddy Kristiansen and Svend Pedersen. Freddy developed COMAL for the Amstrad. So he is very accustomed to the problems of COMAL development.

Amiga COMAL comes as an interpreter, some demonstration programs and a number of extension packages. An optional development disk includes a runtime compiler plus the necessary programs to create packages in assembler and the 'C' source code for some of the supplied packages.

When the COMAL interpreter is booted up it displays two windows on an AmigaCOMAL screen, which is in front of the Workbench screen. Like Amiga BASIC one window, called the Command window, is used to enter programs. The other, Execute, window is where the output from executed programs appears. Unlike BASIC, it is possible to modify this arrangement by making use of the supplied 'Install' program. This allows the user to choose whether a separate AmigaCOMAL screen is created and how many and what type of windows are used. Each window can be configured to a user defined size. The user can define how many bit planes are used and whether the screen is interlaced or not. The font and font size used on each window can also be set up. The user can define how much memory to set aside for programs and whether a memory window, which shows the amount of free memory, is turned on or off. Finally the number of open files allowed and directory paths

for programs, packages and external procedures can be individually set.

My personal preference is for separate command and execute windows so the option to combine the two as one window suits me very well. In this mode Amiga COMAL looks very similar to COMAL on the 64 or PC. I have found however that in this mode the standard 'Graphics' package cannot be used to any effect. A PC Graphics' package does work however although this tends to operate more slowly than the 'Graphics' package.

The commands available within Amiga COMAL fully cover the COMAL standard. The more useful extensions are also included although, annoyingly, they do not always operate the same way as in other COMAL versions. All the structures of the 64 COMAL cartridge are implemented along with an additional LOOP <n> TIMES structure. The most significant addition is the ability to create data record structures and pointer variables.

The editor for creating COMAL programs is very much like the version for the 64. Bi-directional scrolling has been added although to make full use of this function the command window must be wide enough to accommodate each of the program lines as single lines. If a program line wraps to a second screen line, the scrolling stops and nothing can be done about it. Editing split lines also seems to be a problem as the wrapped round portion is lost if the line is edited!

The package facility in Amiga COMAL is much enhanced. It is now possible to create packages by writing them in COMAL rather than Assembler. Some of the supplied packages are written in COMAL which is very agreeable as any bugs found can be easily changed. Packages can also be written with Assembler and 'C'.

The Amiga COMAL is supplied with a number of packages including a System package, two graphics packages, a Turtle package and Speech package. There are no specific commands to create Amiga-like menus or requestors etc. However, there are a number of packages to access the various libraries such as EXEC-Library, INTUITION-Library, etc. It is here that my Danish lets me down because I do not have a clue

how to use these packages, although I think they could well be very important.

File handling is exactly the same as that using the 64 COMAL cartridge. Sequential and random files are supported and peripheral devices are known by their usual names such as DS: for the screen and LP: for the printer.

I cannot say in truth that using Amiga Comal has been all plain sailing. I found the differences from the PC COMAL very annoying. I had to learn a whole new set of control keys and function keys. I would have preferred them to be identical between the PC and Amiga COMAL versions.

One extremely irritating feature is the FIND or CHANGE command. After the first occurrence of the search string is found, it is necessary to press CTRL-C to tell Amiga COMAL to go looking for next occurrence. It is automatic with 64 or PC COMAL unless one escapes from the command. What is worse is that the next search always starts from the following line so if two or more occurrences of the search string occur on a single line only the first will be found. I am hoping that now that Freddy is working for UniComal APS, future versions of Amiga COMAL, if they appear, may be more compatible with PC COMAL.

Another irritation I have encountered is that Amiga COMAL sometimes finds it necessary to display the Workbench screen when an error occurs. It gives the impression that it has bombed out of COMAL. In fact this is not so as one simply clicks the 'go to the back' gadget and the AmigaCOMAL screen reappears.

The speed of Amiga COMAL is very impressive. Although listing a program does not seem as fast as the PC version, program execution speeds are improved. I ran a number crunching program on the 64, the PC and the Amiga with their relevant COMALs. The 64 took nearly 15 mins. The PC COMAL ran the program in just over 7 mins and the Amiga COMAL took 2 mins and 10 seconds. I was using a PC with Norton rating of 1 for this test. Just as a comparison the same program in Amiga BASIC took 7-1/2 mins.

My conclusions are that Amiga COMAL is a reasonably robust version of the language I know and love. I do not relish its environment as much as the PC COMAL but at long last I am now able to program my Amiga. This last observation must be reason enough for giving it a 4 (out of 5) rating.

A demo version (with everything but the SAVE, ENTER and MERGE commands) is available on Fish disk 296. A lot of useful documentation is included. You can get a copy of Fish 296 from ICPUG or if you have any difficulty contact me C/o AUI. **B.G.**

One major reason is the high level of expertise of the air traffic controllers who more often make the news with strikes than with heart attacks while at work and get little praise for the exceptionally stressful and highly professional job they do 24 hours a day.

Some time ago, with great confidentiality, Commodore introduced AUI to a number of business-like gentlemen in suits whose identity was only revealed to us under an oath of silence. They were, we were told, from the CIA. Their talk of planes and training made us think that perhaps we were into some Contragate affair and we could not quite understand where Commodore and the Amiga, about which they were enthusiastic, fitted in. All became clear when we realised it was not the CIA but the CAA - the Civil Aviation Authority - whence they came.

The CAA has responsibility for all U.K. airports and close connections with similar bodies in other countries. It is charged not only with providing you with dutyfree counters but with the much more important task of ensuring that the airports are safe and run efficiently.

Through Commodore and some other expert high tech supply organisations, with the CAA, a project had been created so that the Amiga could be the heart of a new training system for air

"There is a 21 inch monitor but it is mouseless and its control is carried out through a touch screen."

traffic controllers that would be not only easy to use but cheap to buy and support.

Commodore has always maintained that though the Amiga may be the world's greatest home games computer it also has much more serious potential than that. Indeed taking it back even further, when Jay Miner, the Father of the Amiga, began the project that started out as Lorraine and then was called Amiga, even before CBM was involved, he initiated it very largely to create a superior flight simulator. But neither he nor Commodore would have guessed that one day the safety of literally hundreds of planes and tens of thousands of passenger in the U.K. is now in the hands of people who are being trained on a system that has been built around the Amiga.

SAAST 2000

The system is called SAAST 2000, for the Amiga on which it runs. It can be

used for all aspects of ATC training from the most basic skills up to the validation of controllers. It is really a low-cost, flexible, user-friendly simulator offering as many as 128 controllable "tracks" i.e. aircraft per terminal per exercise; with the possibility of running five terminals per computer.

The Amiga 2000 on which the SAAST system is based is very little different from one you can buy in your local store, now for under £1000. It uses a Motorola 68020 CPU but the screen displays are driven by a purpose-built ultra-high resolution colour graphics board developed by a company called Hi-Tension, giving 1280 x 1024 pixel resolution.

The control terminal, used by the trainer, has a 15 inch display which is controlled by the usual mouse-operated Amiga WIMPS environment. Through this terminal the trainer can control the whole operation of the system including a slaved radar display.



For the student however, there is a 21 inch monitor but it is mouseless and input is executed through a touch-screen. And there is an input operator terminal which has switchable screens giving either an independent radar display or an input display, both controlled by the touch screen.

The preparation of any data for the system does not need complex coding but is carried out through an A3 size digitising tablet which has incorporated specialist draughting software for map and airspace design.

Screen dumps, flight progress or any other information can be taken off to an attached ink-jet printer.

Not content with the simulated visual material, the system takes in audio too. It will give 2 channels of simulated radio telecommunications with listen only, listen/transmit and intercom facilities plus 10 simulated telephone lines. It even has footswitches and headsets just like the real ATC tower environment.

Software for SAAST has been cre-

ated by a special team of CAA ATC experts working for the last five years in the development of microcomputer-based simulation. It is even possible to interconnect a number of host Amigas so that the flexibility and reality of the atmosphere can be enhanced.

It all sounds a bit high tech and SciFi for your home Amiga, something to happen in the future perhaps? Wrong. In the year or so since AUI was introduced to the CIA, sorry CAA men, the SAAST system has been finished and is already installed in all major CAA airports in the U.K. as well as at the College of Air Traffic Control at Hurn, in Kent, and also at many Ministry of Defence establishments. So the Amiga is already playing a role in keeping those 40 second planes apart - or at least is helping the people who make sure that it happens are well enough trained.

"Their talk of planes and training made us think that perhaps we were in some Contragate affair."

That is not the end of the story however. First, it is the intention to sell the SAAST 2000 system to other countries, for it seems that not only is it perfect for its task and that the Amiga which powers it is giving full satisfaction but that its cost is far less than any similar system, especially if not Amiga-based entail. The fact that the Amiga's outstanding computing capability is so cheap, did not escape the sight of those in the CAA who originally chose it. So when you fly in to foreign airports in the future, if their air traffic controllers have infuriated you by going slow and holding up your take off at Gatwick by 9 or 10 hours, it might be some be some little comfort to think, when you get there safely, that they could well have been trained on an Amiga.

One further more domestic note. You might get the chance to try out the whole SAAST system for yourself and bring down, gently we hope, those 747s onto their runways - still 40 seconds apart. For we hear that the CAA are so pleased with the whole system that they are collaborating in bringing a cut-down but still highly realistic version to your home screen in the form of an air traffic control simulation game. We don't know yet whether it will include a strike option or any of those antics seen in the Airplane movies but it should be interesting if it lives up to the claim of the SAAST system that it is "taking ATC training into the next century". Will that be with an Amiga 8000 or 9000?

B.V.

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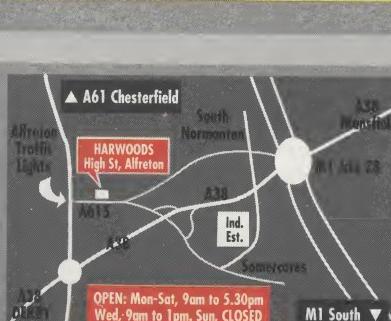
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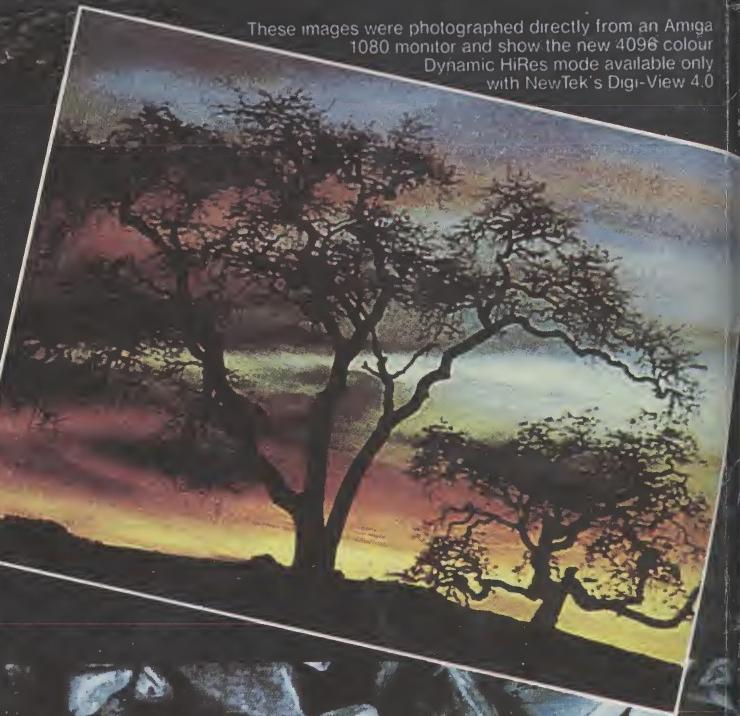
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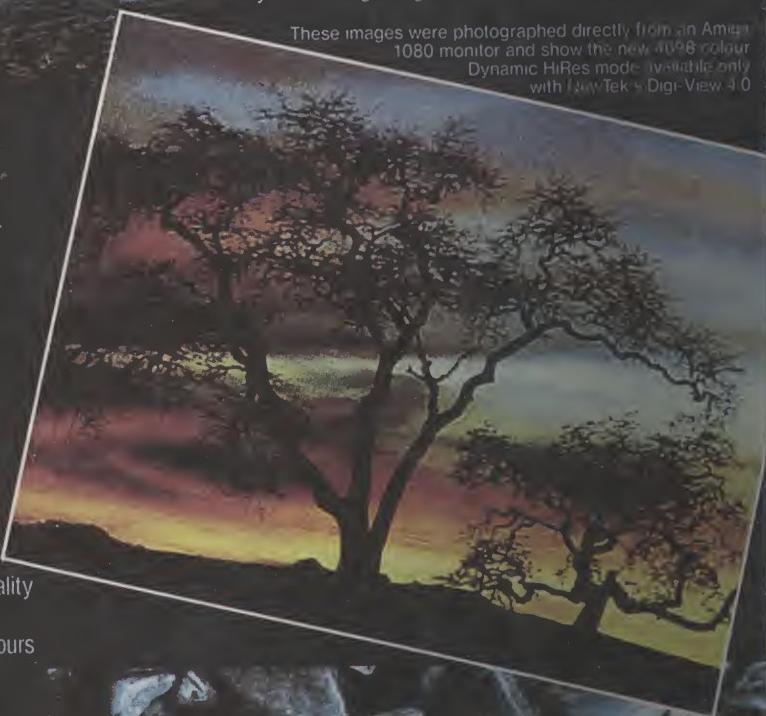
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